AN EXAMINATION OF HARDINESS THROUGHOUT THE
SPORT INJURY PROCESS

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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 Cardiff School of Sport,
University of Wales Institute, Cardiff

December 2009
This thesis is dedicated to my parents
DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed: ........................................ (candidate)
Date: ............................................

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged explicitly in the references.

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STATEMENT 2

I hereby give consent for my thesis, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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Procedure

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CHAPTER 1: Introduction

Abstract

Introduction

Summary of Studies

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Study 2: Major life events, hardiness, coping strategies and psychological responses: A qualitative follow-up study.

Study 3: Evaluating a hardiness intervention throughout the sport injury process: An action research study.

Conceptual, Measurement and Theoretical Issues

Does hardiness moderate the relationship between stressful circumstances and health?
What mechanisms does hardiness operate through to maintain health under stressful circumstances?  

What measure should future research use to assess major life events?  

What measure should future research use to assess injured athletes’ psychological responses?  

Do psychological responses and coping strategies change over time?  

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Summary

This thesis examined hardiness throughout the sport injury process. Study 1 investigated the affect of hardiness on the prediction of, and response to, sport injury. The data were analysed using hierarchical logistic regression and a two-way multivariate analysis of variance. Findings revealed that negative major life events predicted sport injury and hardiness moderated this relationship. Furthermore, main effects were found for hardiness and time on injured athletes’ psychological responses and use of coping strategies. But despite these significant findings, this study was limited in that it failed to explain why these phenomena occurred. As a result, Study 2 aimed to enhance the interpretability and meaningfulness of the findings from Study 1. Semi-structured interviews were conducted and transcribed, which were then analysed and displayed using composite sequence analysis. Findings revealed that athletes high in hardiness were less susceptible to injury as a result of negative major life events and were able to facilitate their recovery from injury because they used a refined repertoire of problem- and emotion-focused coping strategies. In contrast, athletes low in hardiness exacerbated the impact of negative major life events and injury by using avoidance coping strategies. The depth of these findings offered implications for professional practice in terms of minimising rates of injury occurrence and facilitating recovery from injury. Study 3 aimed to evaluate a hardiness intervention throughout the sport injury process. Within the framework of action research proposed by Evans, Fleming, and Hardy (2000), multiple methods of data collection were used. Findings revealed that the pre-injury intervention increased non-injured athletes’ awareness of how to improve their practice when coping with negative major life events, whereas the post-injury intervention improved the practice of an injured athlete by facilitating his recovery. The thesis concludes with a discussion of its strengths and limitations, practical implications and future research directions.
CHAPTER 1: 

Introduction
Introduction

After one particularly frustrating day, I suddenly felt as if I couldn’t cope any longer. I stood in the bathroom of our room in the apartment, locked the door and stared at the mirror, feeling utterly miserable. I was crying uncontrollably but tried to drown out the sound by running the tap into the basin and keeping down the noise of my sobs. There was a pair of nail scissors in a cup on a shelf. To this day, I don’t know what made me do this, but I picked them up, opened them and started to cut my left arm with one of the blades. One cut for every day that I had been injured… I stared at myself with hatred, wondering if anyone could have put a curse on me to cause this endless run of injuries, asking myself, ‘Why me? What have I done to deserve this hurt and disappointment?’… I knew I needed help, but I didn’t know where to find it. I had to try and cope with the negative feelings on my own – one of the hardest things I’ve had to do… Those were the days when I reached rock bottom (Kelly Holmes, 2005, p. 210-211).

This quote from Dame Kelly Holmes provides a brief insight into her ongoing emotional struggles with a relentless run of injuries. Clearly, injuries not only impact athletes physically, but also have psychological ramifications. Therefore, despite that the main focus of coaches, sports scientists and medical practitioners should be directed towards the prevention of injury occurrence so that athletes can progress towards and ultimately achieve their competitive goals and aspirations, when athletes do become injured it is important that they possess the appropriate attitudes and coping strategies needed to enable them to recover both physically and psychologically.
Over recent years the research surrounding the psychology of sport injury has developed and expanded considerably (Brewer, 2007; Evans, Mitchell, & Jones, 2006; Williams & Andersen, 2007), which can be divided into two broad domains: (a) prediction of sport injury, and (b) response to sport injury. But despite the recent healthy and productive evolution of this field of research, these two related domains of enquiry have yet to be integrated to provide a more complete picture of the sport injury process. Furthermore, the effects of a number of variables throughout this process also remain either unexplored or poorly understood. Indeed, Appaneal, Rockhill, Perna, and Roh (2009) recently reported that the post-injury literature is dominated by negative concepts such as grief and depression (e.g., Evans & Hardy, 1995; Leddy, Lambert, & Oges, 1994). As a result, recommended practical implications in the literature are often directed towards practitioners helping athletes to ‘repair’ the potentially damaging consequences of injury. However, although there is no denying the suffering injury can cause, Seligman and Csikszentmihalyi (2000) reported that, “Treatment is not just fixing what is broken; it is nurturing what is best” (p. 7). It is perhaps important, therefore, that practitioners not only consider the negative ramifications of injury, but also how they can help athletes to grow from their experience of injury and its aftermath. Taken together, it would appear there is a need for a shift in the psychology of sport injury literature; from the dominant focus on the negative consequences of sport injury, to a more balanced approach that is also mindful of, and accounts for, positive concepts that can help to instil strengths and virtues in athletes; a paradigm that is consistent with the recent positive psychology agenda (Seligman & Csikszentmihalyi, 2002).

One positive concept that could have an important influence throughout the sport injury process is ‘resilience’ (e.g., Bonanno, 2004, 2005; Kelley, 2005; Linley
& Joseph, 2005; Litz, 2005; Maddi, 2005; Roisman, 2005). Although the terms, “resilient, resilience, and resiliency” are often used by coaches and the media to describe favourable responses of athletes or teams to incidents such as catastrophic injuries” (Galli & Vealey, 2008, p. 316), this concept remains largely overlooked in the psychology of sport injury literature. One salient pathway to resilience according to Bonanno (2004) is the personality trait of hardiness. Introduced by Kobasa in 1979, over the past three decades hardiness has emerged, “as a pattern of attitudes and actions that helps in transforming stressors from potential disasters into growth opportunities” (Maddi, 2005, p. 261). However, although Andersen and Williams recommended in ‘1988’ that future research should examine, “the relationship between hardiness and injury” (p. 301), the role of hardiness throughout the sport injury process has yet to be examined systematically. This omission is surprising on two counts. Firstly, Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of response to sport injury suggest that hardiness could lower the risk of, and facilitate physical and psychological recovery from, injury. Secondly, the personality trait of hardiness, for some time now, has been shown to lower the risk of physical disorders (e.g., cardiovascular diseases, obesity, cancer, and Alzheimer’s disease) and mental health problems such as depression and anxiety (see Maddi, 2002, 2005, 2006). Considering, therefore, the important implications hardiness may have for athletes, coaches, sport scientists and medical practitioners who have a vested interest in minimising rates of injury occurrence and/or facilitating athletes’ physical and psychological recovery from injury, a renewed stimulus is clearly needed to examine its role throughout the sport injury process.
Purpose of the Thesis

The central purpose of this thesis was to examine the effect of the personality trait of hardiness throughout the sport injury process. The specific aims of this thesis were to: (a) examine the main and moderating effects of hardiness on the prediction of injury occurrence, and its effects on how athletes psychologically respond to and cope with sport injury over time; (b) explore the mechanisms through which hardiness exerted its effects on the prediction of, and response to, sport injury; and (c) to improve the practice of non-injured and injured athletes by introducing the attitudes and coping strategies associated with hardiness. A number of methodologies were employed to achieve these aims, including: quantitative methods of data collection (i.e., questionnaires) and analysis (i.e., hierarchical logistic regression and multivariate analysis of variance); and qualitative methods of data collection (i.e., interviews, focus-groups, participant observation, diaries, field notes, and research log), analysis (i.e., composite sequence analysis) and representation (i.e., realist and confessional tales).

Structure of the Thesis

The thesis comprises six chapters and contains three empirical studies. Following this Introduction, the purpose of Chapter 2 was to provide a critical review of the research that has examined the psychology of sport injury literature and the personality trait of hardiness. Specifically, this chapter aims to: describe Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal et al.’s (1998) integrated model of response to sport injury; synthesise critically the research focusing on pre-injury and post-injury variables pertinent to this thesis, with particular attention to hardiness research in health and sport; illuminate
conceptual and methodological issues that exist within this body of literature; and provide future research directions.

The purpose of Chapter 3 (Study 1) was to examine the effect of hardiness on the prediction of injury occurrence and how athletes’ psychologically respond to and cope with injury over time. Asymptomatic participants (n=694) were drawn from a number of sports institutions based within the United Kingdom. From the total sample, 104 athletes subsequently incurred an injury. Hierarchical logistic regression and two-way (Hardiness x Time) repeated measures multivariate analysis of variance (MANOVA) were used to analyse the data. Findings revealed that negative major life events and hardiness predicted injury status, and hardiness moderated the relationship between negative major life events and sport injury. Post-injury findings revealed that high-hardy athletes (i.e., athletes high in hardiness) were less devastated, less dispirited, more reorganised, and used more problem- and emotion-focused coping strategies and less avoidance coping strategies than their low-hardy counterparts (i.e., athletes low in hardiness). Although this study observed that hardiness could minimise rates of injury occurrence and expedite athletes’ psychological recovery from injury, it was limited in that it failed to explain empirically why these phenomena occurred.

The purpose of Chapter 4 (Study 2) was to enhance the interpretability and meaningfulness of the findings that emerged from Study 1. Specifically, Study 2 aimed to yield a rich and detailed understanding of the perceived processes underlying the pre-injury and post-injury findings and the contexts in which they resided. Semi-structured interviews were conducted using an interview guide with a purposeful sample of 10 athletes. The interviews were subsequently transcribed, and analysed and displayed using composite sequence analysis. Findings revealed that
high-hardy athletes were less susceptible to injury as a result of negative major life events and were able to facilitate their recovery from injury because of a refined repertoire of cognitive and behavioural problem- and emotion-focused coping strategies. Specifically, these coping strategies enabled the high-hardy athletes to transform stressful circumstances (e.g., negative major life events and injury occurrence) into developmental rather than debilitating experiences. In contrast, their low-hardy counterparts exacerbated the impact of negative major life events and injury occurrence by using a number of cognitive and behavioural avoidance coping strategies (e.g., denial and mental disengagement). These strategies over time had a number of negative implications both pre-injury (e.g., depression and isolation) and post-injury (e.g., non-adherence and re-injury). These findings had implications for the design of interventions that aim to minimise injury rates and/or facilitate recovery from injury.

Chapter 5 evaluated a hardiness intervention throughout the sport injury process. The intervention aimed to introduce the attitudes and coping strategies associated with hardiness initially to a group of non-injured athletes and subsequently to an injured athlete. Within the framework of action research proposed by Evans, Fleming, and Hardy (2000), multiple methods of data collection were used (e.g., questionnaires, interviews, focus-groups, participant observation, diaries, field notes and research log). The findings were presented as a first-person narrative, incorporating a realist and confessional tale. The pre-injury intervention was perceived by the players to increase their awareness of how to improve their practice when coping with negative major life events (i.e., a significant predictor of injury occurrence), whereas the post-injury intervention was found to actually improve the practice of the injured participant by facilitating his physical and psychological
recovery from injury. Alongside introducing the hardiness attitudes and actions to the participants, the study also found support for a number of other strategies (e.g., different types of social support), which helped to facilitate the hardiness intervention and to meet the participants’ needs. In summary, this study offers a useful template for future researchers to implement and evaluate interventions throughout the sport injury process.

The purpose of the sixth and final chapter was to draw together the findings and present the implications of this programme of research. Specifically, it aimed to provide: a summary of the aims and key findings of each of the three studies; a critical discussion of the conceptual, measurement and theoretical issues that emerged from this thesis; the resultant practical implications; the strengths and limitations of the thesis; future research directions; and a conclusion that draws together the central aspects of this programme of research.
CHAPTER 2:

Literature Review
Abstract

The purpose of this chapter was to provide a critical review of the research that has examined the psychology of sport injury literature and the personality trait of hardiness. Specifically, this review aimed to describe Williams and Andersen’s (1998) model of the prediction of sport injury, and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of response to sport injury. It also aimed to synthesise critically the research focusing on pre-injury (i.e., major life events and personality) and post-injury variables pertinent to this thesis (i.e., psychological responses and coping strategies), with particular attention directed towards hardiness research in health and sport. Conceptual and methodological issues that exist within this body of literature are also reviewed. The chapter concludes with the future research directions emanating from the review.
Introduction

A literature review according to Hanton and Mellalieu (2006), “acts as the primary catalyst for a topic’s emerging organization, reorganization and structure, and generates perspectives and pointers for further study directions; it establishes reference points and foundations for continued progress” (p. vii). The purpose of this chapter, therefore, was to describe the models that currently guide systematic lines of enquiry in relation to the sport injury process, and to provide a critical account of the literature surrounding the psychology of sport injury and the personality trait of hardiness. The chapter is divided into four sections: (a) Prediction of Sport Injury, (b) Response to Sport Injury, (c) Personality Trait of Hardiness, and (d) Summary and Recommendations for Future Research. Each section is divided into a number of subsections.

Prediction of Sport Injury

Although engaging in sport and exercise has many benefits for health and general well-being, not all the effects are positive (e.g., Bathgate, Best, Craig, & Jamieson, 2002; Bert & Overpeck, 2001; Brooks, Fuller, Kemp, & Reddin, 2005; Conn, Annest, & Gilchrist, 2003; Uitenbroek, 1996). Indeed, Uitenbroek (1996) conducted a population survey and found sport and exercise to be the most prevalent cause of injury. Of the participants examined (n=6596), 335 (5.1%) reported being injured in the previous month and 32.5% of those participants were injured whilst engaging in sport and exercise. Uitenbroek (1996) concluded that, “Given the high level of exercise- and sport-related injuries reported by the participants, learning more about the causes and consequences of those injuries is paramount” (p. 383). In relation to the causes of athletic injuries, Udry and Andersen (2008) reported that the causal factors are often multiple and complex, including physical and physiological
(e.g., body composition), anatomical (e.g., biomechanical factors) and environmental
(e.g., training surfaces). Although the influence of these various factors is not
disputed, the scope of this chapter is limited to examining the role that specific
psychosocial factors may play in increasing the risk of injury among athletes.

To address the narrow scope and atheoretical nature of early research into the
psychosocial risk factors of injury occurrence (i.e., Bramwell, Masuda, Wagner, &
Holmes, 1975; Coddington & Troxell, 1980; Cryan & Alles, 1983), Andersen and
Williams (1988) introduced a model of the prediction of sport injury. It was revised
in 1998 (Williams & Andersen) and remains the most comprehensive and influential
model in this area of research (Figure 1). Williams and Andersen’s (1998) revised
model suggests that personality traits (e.g., hardiness, locus of control, sense of
coherence, competitive trait anxiety, achievement motivation, sensation seeking),
history of stressors (i.e., major life events, daily hassles, previous injuries) and
coping resources (e.g., general coping behaviours, social support, psychological
skills) contribute to the prediction of sport injury either in isolation or interactively.
These psychosocial variables are hypothesised to influence athletes’ susceptibility to
injury indirectly through their effects on the stress response (i.e., the central core of
the model). The stress response reflects a bidirectional relationship between athletes’
cognitive appraisals of, and their attentional and physiological responses to, a
potentially demanding athletic situation. The model implies, therefore, that those
athletes with undesirable personality traits, a history of many stressors and
inadequate coping resources are more likely to appraise a potentially demanding
athletic situation as stressful and also exhibit greater attentional (e.g., peripheral
narrowing) and/or physiological responses (e.g., increased muscle tension) than
athletes with an opposite profile (i.e., desirable personality traits, a history of few
stressors and adequate coping resources). The stress response is the mechanism through which injury is proposed to occur.

![Stress Response Diagram](image)


Although researchers have since examined a number of the central tenets of Williams and Andersen’s (1998) model, including: daily hassles (e.g., Blackwell & McCullagh, 1990; Bringer & Udry, 1998; Fawkner, McMurray, & Summers, 1999; Hanson, McCullagh, & Tonymon, 1992; Smith, Smoll, & Ptacek, 1990); previous injury (e.g., Hanson et al., 1992; Lysens, Steverlynck, Vanden Auweele, Lefevre, Renson, Claessens, et al. 1984; Maddison & Prapavessis, 2005; Van Mechelen, Twisk, Molendijk, Blom, Snel, Kemper, 1996; Williams, Hogan, & Andersen, 1993); coping resources (e.g., Ford, Eklund, & Gordon, 2000; Hardy, Richman, & Rosenfeld, 1991; Maddison & Prapavessis, 2005; Noh, Morris, & Andersen, 2005;
Petrie, 1992, 1993a; Rogers & Landers, 2005); stress response (e.g., Andersen & Williams, 1999; Rogers & Landers, 2005; Williams & Andersen, 1997; Williams, Tonymon, & Andersen, 1990, 1991); and interventions (e.g., Johnson, Ekengren, & Andersen, 2005; Kerr & Goss, 1996; Kolt, Hume, Smith, & Williams, 2004; Maddison & Prapavessis, 2005; Perna, Antoni, Baum, Gordon, & Schneiderman, 2003) – this section of the review will exclusively focus on the origins of, and empirical research surrounding, major life events and personality traits.

**Major life events.** Major life events are stressors (e.g., death of a close family member, being fired from job, and marriage), which potentially require a substantial amount of physiological, psychological and behavioural readjustment (Brown & Harris, 1978; Holmes & Rahe, 1967). To distinguish major life events from other stressors (i.e., daily hassles and chronic stressors), Pratt and Barling (1988) suggested that major life events occur infrequently and are of a high intensity. According to Dohrenwend and Dohrenwend (1974), the origin of research investigating the impact of major life events on various health-related outcomes can be traced back to the work of Cannon in the late 1920’s. Cannon’s work suggested that emotion-provoking stimuli (e.g., major life events) may result in physical illness through various physiological mechanisms. Building upon Cannon’s observations, Meyer (1951) trained physicians to use a life chart as a diagnostic tool, which included a section dedicated to major life events. The examples of the events that he considered important to the etiology of disease were, “changes of habitat, of school entrance, graduations or changes, or failures; the various ‘jobs’; the dates of possibly important births and deaths in the family” (p. 53). However, although these scholars provided a rationale to examine the effect of major life events on various health-related outcomes, the momentum of empirical research into major life events was largely
attributable to the pioneering work of Thomas Holmes and Richard Rahe in the late 1960’s.

Holmes and Rahe (1967) were the first researchers to devise a measure of major life events (i.e., Social Readjustment Rating Scale; SRRS) in an attempt to refine Meyer’s life chart for research purposes. In excess of 1,000 empirical studies employed the SRRS within the first decade of its publication (Holmes, 1979). Findings revealed that an increase in major life events was associated with a heightened susceptibility to a variety of illnesses, including tuberculosis, diabetes, arthritis, cancer (Holmes & Musuda, 1974), accidents (Selzer & Vinokur, 1974), and poor academic performance (Lloyd, Alexander, Rice, & Greenfield, 1980). However, the first author to examine the impact of major life events on sport injury was Holmes in 1970. Holmes gathered major life event scores for 100 college football players and found that 50% of those athletes who encountered high levels of major life events incurred an athletic injury that required missing at least three days of practice or one game. In contrast, only 25% and 9% of athletes who respectively encountered medium or low levels of major life events experienced equivalent injuries. Subsequent studies supported these findings using similar samples: 82 college football players (Bramwell et al., 1975) and 151 college football players (Cryan & Alles, 1983).

Although Holmes and Rahe (1967) reported that major life events could have health implications regardless of their desirability, Passer and Seese (1983) found that negative rather than positive major life events were associated with injury occurrence in a sample of 104 college football players. Furthermore, the majority of subsequent research supported Passer and Seese’s findings across a variety of sports (e.g., gymnastics, basketball, wrestling, soccer, rugby union, rugby league,
swimming, track and field, and volleyball) and competitive levels (i.e., club to elite standards of competition – e.g., Andersen & Williams, 1999; Hardy & Riehl, 1988; Maddison & Prapavessis, 2005; Noh et al., 2005; Patterson, Smith, Everett, & Ptacek, 1998; Petrie, 1992; Smith et al., 1990; Smith, Ptacek, & Smoll, 1992; Rogers & Landers, 2005). In contrast, some researchers have revealed a correlation between ‘positive’ major life events and injury occurrence (e.g., Blackwell and McCullagh, 1990; Ford et al., 2000; Hanson et al., 1992; Petrie, 1993b) or have failed to demonstrate a significant relationship (e.g., Lysens, Auweele, & Ostyn, 1986; Smith, Ptacek, & Patterson, 2000; Williams, Haggert, Tonyman, & Wadsworth, 1986; Williams, Tonyman, & Wadsworth, 1986). For example, Blackwell and McCullagh (1990) examined 105 college football players and found that those players with more positive major life events incurred more severe injuries. To explain this finding the authors provided the following example, “while ‘major increase in team responsibilities’ could be viewed as being extremely positive, it could also add considerable stress during future practices and games” (p. 25), which, according to Williams and Andersen’s (1998) model, could heighten the risk of injury occurrence.

In a recent systematic review of the empirical literature, Williams and Andersen (2007) reported that at least 40 studies have examined the relationship between major life events and injury. Of those studies, 85% of them revealed a significant positive relationship, which was demonstrated across diverse measures of major life events and definitions of injury (Petrie & Falkstein, 1998). In relation to the measurement of major life events, sport psychology researchers have either employed (e.g., Life Experiences Survey [LES]; Sarason, Johnson, & Siegel, 1978) or revised inventories from the discipline of health psychology to make them more applicable to competitive athletes. The revised measures include the Social and
Athletic Readjustment Rating Scale (SARRS; Bramwell et al., 1975), Athletic Life Experiences Survey (ALES; Passer & Seese, 1983), and Life Events Survey for Collegiate Athletes (LESCA; Petrie, 1992). However, since the SARRS and ALES were developed specifically for college football players, Petrie and Falkstein (1998) recommended that future research should use the LESCA because it was developed using a diverse sample of male and female athletes from a variety of sports. With regard to the definitions of injury across studies, researchers have typically used time loss (e.g., the number of days missed and/or modified from practice and competition), as an indirect measure of injury severity. However, not only are definitions based on time loss inconsistent with Williams and Andersen’s (1998) model that predicts injury outcome (i.e., greater likelihood of injury as opposed to severity of injury), but according to Johnson et al. (2005), “This tact has problems. For example, is 6 days missed due to three separate injuries the same as 6 days missed due to one injury?” (p. 34). Johnson et al., therefore, suggested that not only was number of injuries in keeping with Williams and Andersen’s (1998) model, it was also the cleanest and most appropriate definition of injury.

Despite the consistent association between major life events and injury occurrence, it is important to note that major life events have only accounted typically for less than 15% of the variance in injury occurrence. As a result of what appears to be a rather weak relationship between major life events and injury occurrence and in an effort to account for additional variance, researchers have increasingly examined variables that may moderate the relationship (i.e., affect the strength of the relationship between major life events and injury; cf. Baron & Kenny, 1986). This process has involved investigating the role of a number of variables such as personality traits.
Personality traits. Personality can be defined as a dynamic and organised set of characteristics possessed by a person that uniquely influences their cognitions, motivations and behaviours in various situations (Ryckman, 2007). Although a number of researchers had examined whether personality traits increased athletes’ resiliency or vulnerability to injury prior to the introduction to Andersen and Williams’s (1988) original model, the majority of this early research lacked empirical support (for a review, see Bergandi, 1985). For example, injury-prone athletes were speculated to possess personal characteristics such as masochistic tendencies, being overtly aggressive and a fear of competition (e.g., Sanderson, 1977). Anecdotal accounts were eventually superseded by empirical research which used general personality inventories to compare the profiles of injured and non-injured athletes, including Cattell’s 16 Personality Factor Questionnaire (Cattell, Eber, & Tatsuoka, 1970). Despite some of these studies demonstrating that tough-minded and self-reliant athletes were less likely to become injured than athletes who were tender-minded and dependant (e.g., Jackson, Jarret, Bailey, Kausek, Swanson, & Powell, 1978; Valliant, 1981), progress was hampered by the use of small sample sizes and inappropriate statistical methods (i.e., univariate rather than multivariate analyses). These studies also tended to be retrospective in nature, which limited their ability to infer cause and effect. For example, were athletes more likely to be injured because of their particular personality characteristics or did they display such characteristics because they had suffered an injury? These issues led Kirkby (1995) to suggest that general personality tests have little predictive value in sport injuries, which in turn paved the way for researchers to examine some of the distinct personality traits contained within Andersen and Williams’s (1988) original model. Although not intended to be an exhaustive list, Andersen and Williams suggested six
personality traits based on the stress-illness literature (i.e., hardiness, locus of control, sense of coherence, sensation seeking, achievement motivation and competitive trait anxiety). Of these personality traits, the effects of competitive trait anxiety and locus of control have received the most research attention to-date in relation to their main effect on injury status and/or their moderating effect in the relationship between major life events and injury occurrence.

Competitive trait anxiety is a disposition that reflects the tendency to appraise competitive situations as threatening (Martens, 1977). Research that has examined its main effect on injury occurrence has either revealed a non-significant relationship (Ford et al., 2000; Maddison & Prapavessis, 2005; Passer & Seese, 1983) or shown athletes high in competitive trait anxiety to incur more injuries or more severe injuries (e.g., Blackwell & McCullagh, 1990; Lavallee & Flint, 1996; Smith et al., 2000). In terms of its potential moderating effect, some researchers have failed to find a significant effect (Ford et al., 2000; Maddison & Prapavessis, 2005), whereas others have shown competitive trait anxiety to increase the strength of the relationship between both positive major life events and minor life events and injury time-loss (Petrie, 1993b; Smith et al., 2000). One possible explanation for these contradictory findings is that researchers have employed both unidimensional (i.e., Sport Competition Anxiety Test [SCAT]; Martens, 1977) and multidimensional measures of competitive trait anxiety (i.e., Sport Anxiety Scale; Smith, Smoll, & Schutz, 1990). However, the inconsistency in the findings might also be attributed to researchers only exploring the intensity (i.e., level or amount) of the symptoms athletes’ generally experience. Future researchers, therefore, should consider whether athletes interpret these symptoms as facilitative or debilitative to performance (Mellalieu, Hanton, & Fletcher, 2006), a concept which has been found to be more
sensitive in predicting dependant variables than the traditional intensity component in the anxiety-performance literature (e.g., Jones & Hanton, 2001; Swain & Jones, 1996). The suggestion is also consistent with Williams and Andersen (2007) who reported, “The greatest vulnerability to injury may occur with athletes who have high anxiety and interpret it as having a detrimental effect on performance” (p. 386).

Locus of control is a concept that deals with the degree to which individuals view their lives and environment as under their personal control, which according to Rotter (1966) varies on a dimension from internal to external. An internal locus is characterised by a belief that one’s own actions control personal outcomes in life, whereas an external locus is indicative of an individual who feels himself or herself to be a victim of change or circumstance. In relation to the prediction of injury occurrence, researchers have largely failed to identify a main effect for locus of control on injury status (Hanson et al., 1992; Kerr & Minden, 1988; McLeod & Kirkby, 1995; Passer & Seese 1983). However, in the few exceptions that have, studies have either revealed a significant main effect for external locus of control on either the number or severity of injuries (Dahlhauser & Thomas, 1979; Pargman & Lunt, 1989) or internal locus of control on the number of injuries (Kolt & Kirkby, 1996). A potential explanation for these inconsistent findings is that researchers have employed a variety of different measures, including the Internal-External Locus of Control Scale (Rotter, 1966), Nowicki-Strickland Locus of Control Scale (Nowicki & Strickland, 1973), and Dahlhauser’s Football Locus of Control Scale (Dahlhauser & Thomas, 1979). As a result, Hanson et al. (1992) and Petrie and Falkstein (1998) recommended that future research should devise a sport-specific measure to further examine the relationship between locus of control and injury occurrence. No
researchers have yet examined the moderating effect of locus of control in the relationship between major life events and injury occurrence.

In addition to competitive trait anxiety and locus of control, the main and/or moderating effects of four other personality traits on the prediction of sport injury have been examined. The first of these, sensation seeking, is a biologically based disposition that reflects optimal levels of arousal (Zuckerman, 1979, 1983). High sensation seekers are proposed to have the ability to tolerate emotionally arousing situations and seek out stimulation, whereas sensation avoiders have a low tolerance for arousal and as a result do not care for change, avoid the unfamiliar, and stay away from risky behaviours. Although Smith et al. (1992) did not find sensation seeking to be correlated with injury time-loss, they did find a significant positive relationship between negative-sporting major life events and injury time-loss for athletes low in sensation seeking. No support was offered for the competing hypothesis that high sensation seekers would incur more injuries because of greater risk taking behaviour.

The second trait, dispositional optimism, is a generalised expectation of successful outcomes that is expressed in renewed efforts to attain goals despite the disruption caused by stressful circumstances (Scheier & Carver, 1992). Ford et al. (2000) observed that dispositional optimism was not correlated with injury time-loss; however, a significant positive relationship between positive major life events and injury time-loss was found for athletes low in dispositional optimism. Achievement motivation, the third personality trait is a person’s orientation to strive for task success, persist in the face of failure and experience pride in accomplishments (Gill, 1986). Van Mechelen et al. (1996) found no relationship between achievement motivation and injury status. The fourth and final personality trait examined is hardiness. Conceptually, hardiness comprises three interrelated attitudes:
commitment, control and challenge (Kobasa, 1979). Put simply, individuals high in hardiness or hardy individuals’ feel deeply involved in or committed to the activities in their lives, believe that they can control the events that they experience and consider change as an exciting challenge for further personal development. Ford et al. (2000) found a significant main effect for hardiness on injury status (i.e., as hardiness increased, injury time-loss decreased). Hardiness was also found to positively moderate the relationship between positive major life events and injury time-loss.

Taken together, the empirical research into the effect of various personality traits on injury occurrence is relatively inconsistent, particularly in terms of the role of competitive trait anxiety and locus of control. Although they await replication, the empirical studies which examined the effects of sensation seeking, dispositional optimism and hardiness suggest that these traits appear a promising avenue for future research. Furthermore, Williams and Andersen (2007) recently recommended that future research should examine the personality trait of perfectionism. However, not only are personality traits hypothesised to influence injury occurrence (Williams & Andersen, 1998), they are also suggested to affect athletes’ responses to injury (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998).

Responses to Sport Injury

For most athletes the preparation for competitive and competition itself is associated with a number of stressors (e.g., Dugdale, Eklund, & Gordon, 2002; Giacobbi, Foore, & Weinberg, 2004; Mellalieu, Neil, Hanton, & Fletcher, 2009); however, injury onset, the process of rehabilitation, and return to competitive sport is associated with its own set of associated demands (e.g., Evans, Hardy, & Fleming, 2000; Gould, Udry, Bridges, & Beck, 1997a; Johnston & Carroll, 1998a; Podlog &
Eklund, 2006; Tracey, 2003), which have the potential to affect athletes’ physical and psychological recovery from injury (Wiese-Bjornstal et al., 1998). For example, Gould et al. (1997a) interviewed 21 U.S. elite skiers about the stressors they experienced rehabilitating from season-ending injuries. Findings revealed 182 stressors, which were categorised into a number of dimensions: psychological (e.g., social comparison), social (e.g., isolation), physical (e.g., pain), medical/rehabilitation (e.g., slow progress) and financial (e.g., difficulties with sponsors). Interestingly, the dimensions with the largest number of stressors were the psychological and social dimensions. The authors reported, “What is ironic about these findings is that when most athletic personnel think of athletic injury, physical concerns come to mind. However, our data suggests that the stress resulting from an injury may be more psychologically and socially driven than physically driven” (p. 373). Medical practitioners and coaches, therefore, should be cognisant that sport-related injuries not only impact athletes physically, but have a number of psychosocial ramifications. Indeed, in some instances, levels of depression following injury can be so severe (e.g., Appaneal, Rockhill, Perna, & Roh, 2009; Brewer, Linder & Phelps, 1995; Leddy, Lambert, & Ogles, 1994; Manual, Shilt, Curl, Smith, DuRant, Lester, et al., 2002) that it has been suggested to increase the risk of suicide among athletes (Smith & Milliner, 1994).

Over recent years there has been heightened research interest in the psychosocial impact of sport injury (Brewer, 2007; Evans, Mitchell, & Jones, 2006). This research has largely been guided by cognitive appraisal models of injury response. Of these models, the most comprehensive and the one that has received the most empirical support is Wiese-Bjornstal et al.’s (1998) integrated model (Figure 2). This model suggests that athletes’ emotional and behavioural responses to injury are
moderated by both pre-injury and post-injury factors, which are in turn mediated by the process of cognitive appraisal. Pre-injury factors include personality, history of stressors, and coping resources. Post-injury factors include personal (e.g., injury type and severity) and situational variables (e.g., social support and rehabilitation environment). As a stress-process based model that embraces the concept of change, athletes’ physical and psychological recovery is viewed as a dynamic, interactive process in which cognitions, emotions, and behaviours are explained within a cyclical cognitive framework (Wiese-Bjornstal et al., 1998). Although the model has yet to be examined in its entirety, researchers have focused on a number of the central variables proposed within the model, including: appraisal (e.g., Albinson & Petrie, 2003; Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995); social support (e.g., Bianco, 2001; Bianco & Eklund, 2001; Ford & Gordon, 1999; Johnston & Carroll, 1998b; Rees, Smith, & Sparkes, 2003); self-confidence (e.g., Magyer & Duda, 2000); psychological skills (e.g., Hare, Evans, & Callow, 2008; Vergeer, 2006; Waters, 2007; Newsom, Knight, & Balnave, 2003); adherence (e.g., Duda, Smart, & Tappe, 1989; Pizzari, McBurney, Taylor, & Feller, 2002); rehabilitation outcome (e.g., Brewer, Van Raalte, Cornelius, Petitpas, Sklar, Pohlman et al., 2000); interventions (e.g., Evans & Hardy, 2002a; Evans, Hardy, et al., 2000; Johnson, 2000); and various personal (e.g., athletic identity; Green & Weinberg, 2001) and situational variables (e.g., timing of injury; Gayman & Crossman, 2003). Although examining the research surrounding each of these variables is beyond the scope of this review, the following sections will provide a critical discussion of how injured athletes’ emotionally respond to and cope with injury, which are pertinent concepts within this thesis.
**Emotional responses.** Despite the recent surge of theoretical and empirical interest in the topic of emotions in sport psychology (e.g., Lazarus, 2000; Hanin, 2000; Robazza, 2006; Woodman, Davis, Hardy, Callow, Glasscock, & Yuill-Proctor, 2009), there still remains a lack of consensus among researchers of a precise definition of emotion. Adding to this confusion, and a particular shortcoming of research surrounding injured athletes’ responses to sport injury (e.g., Wiese-Bjornstal et al., 1998), is that researchers often use the terms emotion and mood interchangeably (cf. Gauvin & Spence, 1998; Jones, Lane, Bray, Uphill, & Catlin, 2005; Lane, Beedie, & Stevens, 2005; Mellalieu, 2003; Vallerand & Blanchard, 2000). For example, researchers who have embraced a quantitative paradigm to measure athletes’ emotional responses to injury have frequently used the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) as the primary measurement tool, which measures six dimensions of mood: anger, confusion, depression, fatigue, tension and vigor (e.g., Brewer et al., 1995; Chan & Grossman, 1988; Daly et al., 1995; Gallagher & Gardner, 2007; Green & Weinberg, 2001; Grove & Bianco, 1999; Mainwaring, Bisschop, Green, Antoniazzi, Comper, Kristman, et al., 2004; McDonald & Hardy, 1990; Morrey, Stuart, Smith, & Wiese-Bjornstal, 1999; Pearson & Jones, 1992; Quinn & Fallon, 1999; Smith, Scott, O’Fallon, & Young, 1990; Udry, 1997). Although these studies generally demonstrate that athletes’ mood states shift from a negative to more positive mood state over time, researchers and practitioners need to interpret these findings with caution with regard to how athletes’ emotionally respond to injury.

There are a number of problems with researchers using the POMS to assess injured athletes’ emotional responses to injury. Firstly, the POMS is a measure of mood rather than emotion. Indeed, Jones et al. (2005) reported in relation to the
mood states assessed by the POMS, “Fatigue is not an emotion, confusion would probably best be considered a cognitive state, and depression is fraught with clinical connections, which can confuse researchers and athletes” (p. 408). Secondly, Evans et al. (2006) reported that the previous quantitative research failed to demonstrate support for the oscillation between highs and lows in athletes’ responses to injury. A potential explanation for this is that mood is proposed to be an ‘enduring’ low-intensity state in which an individual does not know the causes of the feelings experienced, whereas emotion is proposed to be a more ‘transient’ high-intensity state that is triggered by an event or stimulus (Jones et al., 2005). Thirdly, the POMS was designed to primarily measure negative rather than positive mood states (Leunes & Burger, 2000), which may help to explain why Appaneal et al. (2009) recently reported that, “the majority of research thus far has focused on negative postinjury reactions” (p. 60). For example, the POMS does not account for potential positive emotional responses that might be experienced at injury onset, during the process of rehabilitation and/or returning to competitive sport (e.g., happiness, relief, pride, hope, gratitude and compassion; Lazarus, 2000). Finally, Evans and Hardy (1999) suggested that since the POMS was not developed to measure or predict variables derived from any psychological response model of injury, its content and predictive validity with regard to injured populations must be questioned. In summary, the preceding discourse is not disputing the potential role mood may play in athletes’ recovery from injury, rather it aims to highlight the importance of developing and/or employing population-specific and conceptually accurate measures that can capture injured athletes’ emotional responses over time. It is also important that future research does not consider mood and emotion as synonymous.
Considering, therefore, that the conclusions from previous quantitative findings using the POMS would appear to be inappropriate and misleading for practitioners with regard to athletes’ emotional responses to injury, a number of researchers have abandoned the nomothetic approach and embraced qualitative methods of data collection (e.g., Gayman & Crossman, 2003; Granito, 2001, 2002; Hurley, Moran, & Guerin, 2007; Mainwaring, 1999; Mankad, Gordon, & Wallman, 2009; Podlog & Eklund, 2006; Rose & Jevne, 1993; Udry, Gould, Bridges, & Beck, 1997). Specifically, these studies encouraged athletes to generate their own meaningful descriptors of emotions that they perceived were representative of their injury experience. Findings suggested that injured athletes experience a range of emotions (e.g., anger, frustration, devastation and sadness) and associated characteristics (e.g., action tendencies such as acting out), which were influenced by a number of factors, including emotional climate and timing of injury onset. Supporting and extending these findings, subsequent qualitative research has explored the temporal nature of injured athletes’ responses to injury (e.g., Bianco, Malo, & Orlick, 1999; Carson & Polman, 2008; Evans, Hardy, et al., 2000; Johnston & Carroll, 1998a; Tracey, 2003). Findings suggest that shock, anxiety, anger, apprehension, depression and feelings of helplessness are prevalent at injury onset, whereas frustration, relief, jealousy, happiness, guilt and apathy characterise athletes’ responses during the rehabilitation phase. Impatience, re-injury anxiety, excitement and fluctuating levels of confidence have been reported to replace these emotions once athletes return to competitive sport.

These qualitative studies have helped to address some of the shortcomings of previous quantitative findings by identifying a broad range of negative emotions (e.g., jealousy, guilt and sadness) and also illuminating a number of positive
emotions such as happiness and relief. Although there are still a number of limitations associated with these qualitative studies (e.g., sampling, approaches to interviewing), these qualitative studies do highlight the need for population-specific measures that can accommodate the broad range of athletes’ emotional responses to injury. Encouragingly, Evans, Hardy, Mitchell, and Rees (2008) recently developed a measure of athletes’ psychological responses, which goes some way to addressing this issue. The Psychological Responses to Sports Injury Inventory (PRSII) was informed by the previous qualitative findings and comprises six subscales (i.e., devastation, dispirited, reorganisation, isolation, feeling cheated and restlessness). Its development was underpinned by the need for theoretically-derived and population-specific measure that assessed psychological responses of injury athletes, and the need to account for the transient nature of athletes’ psychological responses by adopting both intra-individual and inter-individual approaches in measure development. At present, it would appear that future research should aim to employ this measure if researchers and applied practitioners are to accurately assess injured athletes’ psychological responses to injury, and design interventions that are theoretically underpinned to facilitate athletes’ successful return to competitive sport. However, some researchers may prefer to examine specific responses such as depression (e.g., Appaneal et al., 2009; Brewer & Petrie, 1995; Brewer et al., 1995; Leddy et al., 1994), which may involve employing measures such as the Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), the Beck Depression Inventory (Beck, Steer, & Garbin, 1988), or Hospital Anxiety and Depression (HAD) rating scale (Mykletun, Stordal, & Dahl, 2001).
Coping strategies. Considering that sport injury has been described as a significant source of strain (Tracey, 2003), it is not surprising that researchers have directed their attention towards examining the strategies used by injured athletes to cope with the stressful nature of sport injury (Evans et al., 2006). According to Lazarus and Folkman (1984), coping represents a process of constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands appraised as taxing or exceeding one’s resources. Although the literature on coping is voluminous and diverse, several conceptual frameworks have been proposed that attempt to categorise coping strategies based upon the focus of a particular cognition or behaviour (Hoar, Kowalski, Gaudreau, & Crocker, 2006). For example, Lazarus and Folkman’s (1984) conceptual framework differentiates between two dimensions of coping strategies: (a) problem-focused, in which an individual attempts to deal with the environmental demands he or she encounters (e.g., planning and active coping); and (b) emotion-focused, in which an individual attempts to deal with his or her emotional responses to stressors (e.g., seeking emotional support). As a result, researchers need to not only consider the form (cognitive or behavioural) of particular coping strategies, but also their focus (problem vs. emotion). In addition to the two dimensions proposed by Lazarus and Folkman (1984), a number of researchers have proposed a third dimension, avoidance coping, which represents actions employed to disengage from the task and redirect attention to task-irrelevant cues (e.g., Endler & Parker, 1994; Gaudreau & Blondin, 2002).

In contrast to the breadth and depth of research afforded to coping in sport (e.g., Crocker, Kowalski, & Graham, 1998; Hoar et al., 2006), research that has focused on the nature and role of coping with injury is less well developed. Although
the majority of early research provided guidelines for coping with injury (e.g., Heil, 1993; Petitpas & Danish, 1995; Smith, Scott, & Weise, 1990; Weinberg & Gould, 1995; Wiese-Bjornstal & Smith, 1993), the strategies suggested were either derived from studies examining non-athletic populations or based on personal opinion. One of the first studies to examine empirically the coping strategies used by injured athletes was Udry’s (1997). Findings revealed that problem-focused coping was the most frequently used coping strategy, which was later supported by Quinn and Fallon (1999) and also recently found to be negatively correlated to negative mood states (Gallagher & Gardner, 2007). In addition, Udry (1997) found significant changes across the rehabilitation period for emotion-focused coping strategies, which included palliative coping and negative emotional coping (i.e., an increase in the first 3 weeks and then a subsequent decrease). Although Johnston and Carroll (2000) also found the use of coping strategies to vary over three progressive phases of rehabilitation (i.e., a significant decrease as rehabilitation progressed), other quantitative studies have shown usage to remain stable over time (Morrey et al., 1999; Quinn & Fallon, 1999). There are a number of possible explanations for these inconsistent findings, including the contrasting measures of coping employed and the frequency and timing of data collection. In relation to the coping measures employed, the measures include the Coping with Health and Injury Problems (CHIP; Endler, Parker, & Summerfeldt, 1993), COPE (Carver, Scheier, & Weintraub, 1989), Coping Response Inventory Adult Form (Moos, 1993) and the Sports Inventory for Pain (Meyers, Bourgeois, Stewart, & LeUnes, 1992). Although it is not clear at present what is the most appropriate measure to assess injured athletes’ coping strategies, what is evident is that future research needs to be more consistent with its choice of measure so that accurate comparisons can be made across studies. With
regard to the frequency and timing of data collection, Johnston and Carroll (2000) reported using three data collection points over the course of rehabilitation (i.e., initial physiotherapy appointment, midway point in treatment and last physiotherapy appointment), which varied for athletes depending on the length of their rehabilitation. In contrast, Udry (1997) employed five data collection points and used ‘real-time sampling’, which involved the participants completing the measures every three weeks. This variability in the frequency and timing of data collection between studies makes the comparison of findings problematic. However, it is also important to note that none of these studies have accounted for athletes re-entry into competitive sport, which has emerged as a salient phase in recovery from injury (e.g., Bianco et al., 1999; Evans, Hardy, et al., 2000; Podlog & Eklund, 2006).

In addition to the aforementioned quantitative research, a number of researches have adopted a qualitative approach to explore the coping strategies used by injured athletes in more depth. Using retrospective interviews with 21 U.S. Ski Team members who suffered season-ending injuries, Gould et al. (1997b) identified seven general dimensions of coping with injury. These dimensions included driving through (e.g., determination/motivation and set/worked toward and accomplished goals), managed emotions/thoughts (e.g., kept positive focus and expressed emotions), and distracting oneself (e.g., kept busy and sought change of scenery), which are synonymous with problem-focused coping, emotion-focused coping and avoidance coping, respectively (Endler & Parker, 1994; Lazarus & Folkman, 1984; Gaudreau & Blondin, 2002). Driving through was found to be the most frequently used strategy, which was consistent with quantitative findings that also found problem-focused coping to be the most frequently used strategy to cope with injury (Quinn & Fallon, 1999; Udry, 1997). Subsequent qualitative studies have identified a
number of similar problem-focused (e.g., meeting physical challenges), emotion-focused (e.g., positive coping thoughts) and avoidance coping strategies (e.g., non-adherence) used by injured athletes (e.g., Bianco et al., 1999; Carson & Polman, 2008; Johnston & Carroll, 1998a; Hurley et al., 2007; Podlog & Eklund, 2006).

Qualitative studies have also found that the specific coping strategies used by injured athletes to be temporally defined (e.g., Bianco et al., 1999; Carson & Polman, 2008; Johnston & Carroll, 1998a). These studies suggested that the onset of injury was associated with gathering information on the process of rehabilitation and maintaining a positive perspective (e.g., belief that one could recovery to pre-injury levels; Bianco et al., 1999). In contrast, rehabilitation from injury was typically associated with setting specific and realistic short- and long-term goals, which, if achieved, Carson and Polman (2008) found to help increase self-confidence and autonomy. Interestingly, although avoidance coping is often considered a maladaptive coping strategy and has been associated with higher levels of negative moods and substance abuse among injured athletes (Gallagher & Gardner, 2007; Johnston & Carroll, 1999a), Bianco et al. (1999) reported that taking a break from rehabilitation was considered an adaptive coping strategy, because it allowed the athletes to return to rehabilitation feeling re-energised and with a renewed commitment to recovery. Carson and Polman (2008) also found that avoidance coping helped injured athletes’ deal with the physical pain of their injury and developed aspects of their lives outside of sport. In the final phase of recovery (i.e., return to competitive sport), coping strategies included working and training at own pace, setting goals, using pre-performance routines and receiving support from teammates, coaches and medical staff, which eradicated negative emotions and promoted feelings of familiarity and competence.
Taken together, it appears that although problem-focused coping strategies are the most often employed in response to sport injury, coping with injury is a dynamic, complex process involving multiple cognitive and behavioural strategies. Despite the fact that a number of limitations characterise both quantitative (e.g., timing and frequency of data collection) and qualitative coping research (e.g., almost exclusive reliance on injured skiers), it has provided an important foundation for researchers to explore the myriad of factors that may influence injured athletes use of coping strategies (e.g., cognitive appraisal; Albinson & Petrie, 2003) and their subsequent effects on other variables such as mood states (Green & Weinberg, 2001). For example, Albinson and Petrie (2003) found that athletes who appraise injury as stressful are more likely to employ coping strategies that deal directly with injury and its effects (i.e., problem-focused coping), whereas Green and Weinberg (2001) failed to find a significant relationship between coping and mood states in a cross-sectional analysis of athletes’ responses to injury. However, which is the most appropriate measure of coping to employ in future quantitative research remains an unanswered question. To shed some light on this question, from the measures employed to-date it would appear that either the CHIP (Endler, Parker, & Summerfeldt, 1993) or COPE (Carver et al., 1989) could be the most appropriate for future research. Indeed, the CHIP was developed to assess coping with health and injury problems, whereas the content validity of the sub-scales within the COPE has received empirical support from Gould et al.’s (1997b) qualitative findings. That is, Gould and his associates compared their qualitative findings of injured athletes’ coping strategies to existing coping inventories, and they reported that their findings appeared to fit into the sub-scales of the COPE and recommended its use in future research.
The disposition of particular interest in this thesis is the personality trait of hardiness, which is hypothesised to maintain and/or enhance health and performance under stressful situations (Kobasa, 1979). Although it has received some attention in the sport psychology literature (e.g., Golby & Sheard, 2004; Goss, 1994; Hanton, Evans, & Neil, 2003; Kelley, 1994; Kelly, Eklund, & Ritter-Taylor, 1999; Martin, Kelley, & Dias, 1999a; Martin, Kelley, & Eklund, 1999b), it has generally been overlooked by researchers interested in the psychology of sport injury. This is surprising given the role that personality has been afforded in Williams and Andersen’s (1998) and Wiese-Bjornstal et al.’s (1998) theoretical models. Furthermore, Andersen and Williams recommended in ‘1988’ that researchers should examine, “the relationship between hardiness and injury” (p. 301). This section of the review, therefore, aims to review research surrounding the personality trait of hardiness in order to provide a renewed stimulus for examining its role in the sport injury process. The section is divided into three subsections: (a) Conceptual issues, (b) Hardiness research in health, and (c) Hardiness research in sport.

Conceptual issues. Hardiness was originally conceptualised by Kobasa (1979) as the composite of three interrelated resilient attitudes: commitment, control and challenge (i.e., the 3C’s of hardiness). These attitudes are suggested to provide the courage and motivation to transform stressful circumstances from potential disasters into opportunities for growth and development (Maddi, 2002, 2005, 2006). Specifically, commitment is a, “tendency to involve oneself in (rather than experience alienation from) whatever one is doing or encounters” (Kobasa, Maddi, & Kahn, 1982, p. 169); control is a, “tendency to feel and act as if one is influential (rather than helpless) in the face of the varied contingencies of life” (Kobasa et al., 1982, p.
and challenge is the, “belief that change rather than stability is normal in life and that the anticipation of changes are interesting incentives to growth rather than threats to security” (Kobasa et al., 1982, p. 169-170). Put simply, individuals high in hardiness or high-hardy individuals’ easily commit themselves to what they are doing (rather than feeling alienated), generally believe that they can at least partially control events (rather than feeling powerless), and regard change to be a normal challenge or impetus for personal development (rather than a threat).

Despite the plethora of research that has examined hardiness and its implications for various health and performance outcomes (for reviews, see Beehr & Bowling, 2005; Funk, 1992; Ouellette, 1993; Maddi, 2002, 2006; Maddi & Khoshaba, 2004), its conceptualisation is still being questioned by researchers. Specifically, there is debate in the literature over whether hardiness should be conceptualised as a single, unitary construct (i.e., unidimensional), as three distinct components (i.e., multidimensional) or as a synergistic construct (i.e., interactional).

To clarify, hardiness was originally conceptualised by Kobasa (1979) as a single, unitary construct (i.e., a composite of commitment, control and challenge). The three attitudes of hardiness are considered imperfect representations from which the underlying construct of interest emerges. Put simply, “it is the combination of all 3Cs that constitutes hardiness” (Maddi, 2002, p. 176). However, several researchers have since advocated examining the separate effects of the sub-scales of commitment, control and challenge (e.g., Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). Specifically, these researchers suggested that the three sub-scales are not equally effective in predicting health-related outcomes. As a result, Hull et al. suggested that hardiness is not a unitary phenomenon and therefore its component parts should not be combined to form a composite. However, other researchers have
suggested that hardiness should be conceptualised as a synergistic construct, in which the resilient attitudes build upon one another (e.g., Carver, 1989; Funk, 1992). According to this conceptualisation, the whole is considered to be greater than or different from the sum of its parts (Carver, 1989). Put another way, this conceptualisation considers the interaction between the attitudes of hardiness.

Although examining the differing conceptualisations of hardiness may help to demystify its underlying dimensional structure, which conceptualisation is currently ‘correct’ is still a contentious issue, especially as researchers have yet to adequately compare and contrast or integrate them. Until this issue is resolved, however, sport psychology researchers should embrace the unidimensional conceptualisation of hardiness (i.e., a composite of commitment, control and challenge), which is not only consistent with Kobasa’s (1979) original conceptualisation of hardiness, but also the majority of contemporary research (e.g., Bartone, 1999; Maddi, 1999; Maddi & Hightower, 1999). Furthermore, there is empirical support for the construct validity of the composite measure of hardiness and its unidimensional conceptualisation (e.g., Bartone, 1989; Maddi, 1999; Sinclair & Tetrick, 2000; Wallace & Bergeman, 2006). For example, Wallace and Bergeman (2006) recently investigated the unidimensional conceptualisation of hardiness using structural equation modelling to examine whether the attitudes of commitment, control and challenge loaded on the latent variable of hardiness. Findings revealed that the paths from hardiness to each of the three attitudes were all necessary in order to provide a good model fit, providing support for Kobasa’s original conceptualisation of hardiness. Bartone, Ursano, Wright, and Ingraham (1989) also reported, “to treat them independently [i.e., the attitudes of commitment, control and challenge] risks obscuring what is apparently a complex, nonreducible phenomena” (p. 320). More recently, Maddi (2004) also
provided a rationale as to why the hardiness composite is more meaningful and important than the individual attitudes of commitment, control and challenge:

Conceptually, no one of the 3Cs by itself is enough to provide the needed courage and motivation to turn stressful changes to advantage. What is needed is all the three of the Cs operating together (Maddi, 2002). American psychology is currently preoccupied with the importance of the control attitude, and some feel that it is this attitude that fully defines hardiness. Imagine people high in control but simultaneously low in commitment and challenge. They would want to determine outcomes, but would not waste time and effort learning from experience or feeling involved with people, things, and events. They would be egotistical and vulnerable to seeing themselves as better than others and as having nothing more to learn. They would be riddled with impatience, irritability, isolation, and bitter suffering whenever control efforts fail. This is not hardiness (p. 287).

Hardiness research in health. Maddi (2005) recently reported that close to 1,000 studies on hardiness have been published. Taken together, this research has explored the main and moderating effects of hardiness on various health and performance outcomes, the mechanisms through which hardiness influences these outcomes, and the efficacy of hardiness interventions. Although not originally hypothesised by Kobasa (1979) to demonstrate main effects on health-related outcomes, the majority of research has consistently shown hardiness to be a negative predictor of psychological and physical strain (e.g., negative affect, depression, anxiety, anger, blood pressure, burnout and illness), and a positive predictor of various health and performance criteria (e.g., positive affect, self-esteem, quality of life, subjective well-being, job satisfaction, life satisfaction, graduation, retention rate

In relation to the moderating or stress-buffering effects of hardiness, there is a lack of consensus among researchers as to whether hardiness moderates the relationship between stressful major life events and various health and performance outcomes as originally hypothesised and subsequently demonstrated by Kobasa (1979). For example, some researchers have failed to find the expected stress-buffering effects of hardiness (e.g., Funk & Houston, 1987; King, King, Fairbank, Keane, & Adams, 1998; Manning, Williams, & Wolfe, 1988; McCranie, Lambert, & Lambert, 1987; Roth, Wiebe, Fillingim, & Shay, 1989; Schmied & Lawler, 1986), whereas others have revealed significant moderating effects (e.g., Bartone, 1999; Kobasa, 1982; Kobasa et al., 1982; Kobasa, Maddi, & Puccetti, 1982; Maddi, 1999; Nowack, 1989; Rhodewalt & Zone, 1989; Sinclair & Tetrick, 2000; Waysman, Schwarzwald, & Solomon, 2001; Westman, 1990). Possible explanations for these inconsistent findings largely revolve around the measurement of hardiness itself, including the plethora of different measures used across studies and the use of negative indicators in the early measures of hardiness (i.e., high scores indicating an absence of hardiness). Indeed, Funk (1992) suggested, “The proliferation of scales makes the body of hardiness research difficult to interpret. For example, it is difficult to determine whether differences in health outcomes across studies are real or reflect
differences in the hardiness scales used” (p. 336). As a result, Funk recommended that future research should continue to employ the Dispositional Resilience Scale (DRS; Bartone et al., 1989), which not only includes positive indicators of hardiness, but has also been shown to have adequate reliability and validity (e.g., Bartone, 1989; Maddi, 1999). Although a number of other hardiness measures have since been developed (Maddi, 1997a; Maddi & Khoshaba, 2001), these measures are only available through the Hardiness Institute as commercial psychometric instruments. In summary, although the failure to consistently find moderating effects has led some scholars to conclude that hardiness does not have stress-buffering effects (e.g., Funk, 1992; Funk & Houston, 1987), the author agrees with Hull et al. that this issue warrants further investigation.

Research has also examined the four mechanisms by which hardiness has been proposed to lead to maintained and/or enhanced health and performance under stressful circumstances. Research that had examined the first of these, appraising stressful major life events in less stressful terms (e.g., Allred & Smith, 1989; Maddi, 1999; Pagana, 1990; Rhodewalt & Agustsdottir, 1984; Rhodewalt & Zone, 1989; Roth et al., 1989; Wiebe, 1991), suggests that high-hardy individuals are more likely to appraise stressful major life events as positive, controllable and requiring less readjustment than their low-hardy counterparts. Research exploring the second mechanism, employing problem- and emotion-focused coping strategies rather than avoidance coping (e.g., Florian, Mikulincer, & Taubman, 1995; Maddi, 1999; Maddi & Hightower, 1999; Williams, Wiebe, & Smith, 1992), has demonstrated hardiness to be positively associated with adaptive coping strategies such as active coping and planning, whilst being inversely related to maladaptive coping strategies, including behavioural disengagement, mental disengagement and denial. In relation to the third
mechanism, the giving and receiving of social support (e.g., Florian et al., 1995; Ganellen & Blaney, 1984; King et al., 1998; Kobasa & Puccetti, 1983; Maddi & Khoshaba, 2005; Williams et al., 1992), King et al. found that hardiness was positively related with the receipt of social support, whereas Williams et al. (1992) found hardiness to be positively related to seeking social support. The fourth and final mechanism is engaging in positive (e.g., adequate nutrition, exercise and relaxation) whilst avoiding negative health practices such as alcohol and drug use (e.g., Maddi, Wadhwa, & Haier, 1996; Nagy & Nix, 1989; Wiebe & McCallum, 1986). For example, Maddi et al. (1996) examined alcohol and drug use among high school graduates about to enter college. Hardiness was found to be inversely correlated to self-report of the frequency with which these addictive substances had been used. Objective measurement through urine screens also demonstrated an inverse relationship between hardiness and substance use.

Encouragingly for athletes, coaches and practitioners, researchers have also demonstrated that hardiness can be learnt and developed (Khoshaba & Maddi, 1999; Maddi, 1987; Maddi, Kahn, & Maddi, 1998; Maddi, Khoshaba, Jensen, Carter, Lu, & Harvey, 2002). Maddi (1987) was the first to develop, implement and evaluate the efficacy of a hardiness training programme. Although the specifics of the intervention programme are only available through the Hardiness Institute (i.e., through their workbooks that contain narrative, examples, exercises, and checkpoints), the programme aimed to transform stressful situations into opportunities for personal development through developing and implementing plans-of-action, and using the resultant feedback to deepen hardiness attitudes. Using a waiting list control group, Maddi (1987) evaluated the efficacy of the training programme on 27 middle-level managers at the Illinois Bell Telephone company.
Findings revealed a significant increase in hardiness and job satisfaction and a significant decrease in subjective (e.g., anxiety and depression) and objective (i.e., blood pressure) signs of strain in the hardiness training group compared to the waiting-list control group of 19 middle-level managers. Extending this study by using relaxation and passive listening control groups, Maddi et al. (1998) also evaluated the efficacy of Maddi’s (1987) hardiness training programme. Using 46 lower, middle and upper level managers of a utilities company, they reported that the 18 managers who received the hardiness training showed significantly greater increases in hardiness, job satisfaction and perceived levels of social support, along with significant decreases in subjective strain and illness severity compared to those in the relaxation (N = 12) and passive listening control groups (N = 16). More recently, Maddi et al. (2002) evaluated the efficacy of a hardiness training programme with 40 undergraduate students. Expanding upon the previous hardiness intervention programme by including an additional social support component (i.e., the giving and receiving of assistance and encouragement), they found that those students who received the hardiness training showed a significantly greater increase in hardiness and grade point average, and a significantly greater decrease in strain compared to a control group (N = 53) who underwent either a traditional student-enrichment course or a course on leadership training. Overall, despite the support for the efficacy of hardiness training programmes, researchers have yet to examine the efficacy of hardiness training in sport or the effectiveness of these programmes in health or sport (i.e., examining the effects of hardiness interventions in a real-life setting; Seligman, 1995).
**Hardiness research in sport.** Few researchers have examined the effect of hardiness in sport. Of those researchers who have, they have examined its relationship with eight dependent variables. The first dependent variable investigated was performance, where Maddi and Hess (1992) explored the relationship between hardiness and basketball performance. Thirty-seven male athletes from three high-school basketball teams completed a measure of hardiness pre-season, and at the end of the season performance statistics on all the players were obtained from their coaches. Hardiness positively correlated with a number of performance indices, including the number of points scored, assists, rebounds, free throws, steals and games played. The second dependent variable investigated was mood states. Findings have consistently demonstrated that hardiness is inversely related to negative mood states in samples of competitive rifle shooters (Prapavessis & Grove, 1994), competitive swimmers (Goss, 1994) and varsity athletes (Skirka, 2000). Specifically, high-hardy athletes experienced lower levels of tension, depression, anger, fatigue and confusion in comparison to their non-hardy counterparts. In addition, Goss also examined coping strategies and found high-hardy athletes to possess more adaptive coping strategies and fewer maladaptive coping strategies than their non-hardy counterparts (i.e., the third dependent variable). The fourth and fifth dependent variables examined were perceived stress and burnout with collegiate head baseball and softball coaches (Kelley, 1994), collegiate head tennis coaches (Kelley et al., 1999) and athletic directors (Martin et al., 1999a, Martin et al., 1999b). Findings demonstrated that hardiness was inversely related to perceived stress, and directly and indirectly (i.e., through the mediating role of perceived stress) related to burnout. Skirka (2000) also found hardiness to be inversely associated with perceived stress in a sample of varsity athletes. The sixth dependent variable
examined was standards of competition. Golby and Sheard (2004) investigated whether hardiness distinguished between 115 professional rugby league players operating at different standards of competition. Findings revealed that elite players were characterised by higher levels of hardiness than non-elite players. The seventh dependent variable was competitive trait anxiety (Hanton et al., 2003). Hanton et al. found that elite-hardy athletes in comparison to their non-elite counterparts reported lower levels of somatic anxiety and worry and also interpreted these symptoms as facilitative to performance.

The final dependent variable that has been examined was sport injury. Ford et al. (2000) found a significant main effect for hardiness on injury status (i.e., as hardiness increased, injury time-loss decreased), and found hardiness to positively moderate the relationship between positive major life events and injury time-loss (i.e., as hardiness increased, the risk of injury occurrence through encountering positive major life events decreased). Unfortunately, the study used time-loss as the dependent variable which is inconsistent with Williams and Andersen’s (1998) model of the prediction of sport injury. It also failed to examine the mechanisms underlying the reported effects and whether hardiness influenced athletes’ responses to injury. In an earlier study, Grove, Stewart, and Gordon (1990) investigated the relationship between hardiness and mood in a sample of 21 injured athletes and found hardiness to be inversely associated with negative mood states (e.g., tension, depression and anger) and positively related with positive mood states (e.g., vigor and esteem-related affect). However, it is difficult to assess the integrity of this study as the findings have not been disseminated through a full length publication.
Summary and Recommendations for Future Research

Contemporary research has increased our knowledge and understanding of the psychosocial factors that predict injury occurrence, the psychological responses and coping strategies that follow injury, and the effect of hardiness in health and sport. However, there is a dearth of research surrounding the effect of hardiness throughout the sport injury process, which is surprising given that desirable personality traits are hypothesised to reduce the likelihood of injury and to facilitate recovery from injury (Williams & Andersen, 1998; Wiese-Bjornstal et al., 1998). Of those researchers who have examined the effects of hardiness in the context of sport injury (Grove et al., 1990; Ford et al., 2000), they only offered ‘one-shot’ studies, where hardiness was one of a number of independent variables. The purpose of this thesis, therefore, was to introduce a carefully designed systematic programme of research that exclusively investigated the effects of hardiness throughout the sport injury process. Consistent with Williams and Andersen’s (1998) and Wiese-Bjornstal et al’s (1998) theoretical models, the aims of this thesis were threefold:

- To examine the main and moderating effect of hardiness on the prediction of sport injury, and the effect of hardiness on how athletes’ psychological respond to and cope with injury over time
- To identify the mechanisms (where applicable) through which hardiness exerts its effects pre-injury and post-injury
- To evaluate a hardiness intervention throughout the sport injury process.
CHAPTER 3:

Major Life Events, Hardiness, Coping Strategies, and Psychological Responses:

An Examination of the Sport Injury Process (Study 1)
Abstract

This study examined the effect of major life events and hardiness on the prediction of injury occurrence, and the effect of hardiness on how athletes’ psychologically respond to and cope with injury over time. Asymptomatic participants (n=694) were drawn from a number of sports institutions based within the United Kingdom. From the total sample, 104 athletes subsequently incurred an injury. Hierarchical logistic regression and two-way (Hardiness x Time) repeated measures multivariate analysis of variance (MANOVA) were used to analyse the data. Findings revealed that negative major life events and hardiness predicted injury occurrence. Hardiness was also found to moderate the relationship between negative major life events and injury. Post-injury findings revealed main effects for hardiness and time on injured athletes’ psychological responses and use of coping strategies. These findings have implications for minimising rates of injury occurrence, and facilitating injured athletes’ psychological recovery from injury.
Introduction

Over recent years the psychology of sport injury has received a notable increase in research attention (Evans, Mitchell, & Jones, 2006; Williams & Andersen, 2007). This increased research attention is unsurprising considering the high occurrence of athletic injuries (Uitenbroek, 1996), the potential influence that injuries can have on domestic and international sporting success (Kirkby, 1995), and that injuries can lead to considerable decrements in the physical and psychological well-being of competitive athletes (Brewer, 2007). Although many of the causes and consequences of sport-related injuries are undoubtedly physical and environmental in nature, this accumulated body of research suggests that psychosocial factors may contribute to the prediction of sport injury and that responses to injury manifest themselves cognitively, emotionally and behaviourally. To date, two models have guided the empirical research into injury prediction and response: Williams and Andersen’s (1998) stress-based model of the prediction of sport injury, and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of responses to sport injury.

Williams and Andersen’s (1998) model suggests that personality traits (e.g., hardiness, locus of control, and competitive trait anxiety), history of stressors (i.e., major life events, daily hassles, and previous injuries), and coping resources (e.g., social support, psychological skills, and coping strategies) contribute to the prediction of sport injury either in isolation or interactively. These psychosocial variables are hypothesised to influence athletes’ susceptibility to injury indirectly through their effects on the stress response (i.e., the central core of the model). The stress response reflects a bidirectional relationship between athletes’ cognitive appraisals of, and their attentional and physiological responses to, a potentially
demanding athletic situation. The model suggests, therefore, that those athletes with undesirable personality traits, a history of many stressors, and inadequate coping resources are more likely to appraise a potentially demanding athletic situation as stressful and exhibit greater attentional (e.g., peripheral narrowing) and/or physiological responses (e.g., increased muscle tension) than athletes with an opposite profile.

Although the stress response is the mediating mechanism hypothesised to directly influence the risk of injury, researchers have largely examined the main and moderating effects of the psychosocial variables proposed to indirectly predict injury occurrence. To-date, the most consistent variable shown to predict sport injury is major life events (i.e., one component of an athlete’s history of stressors); in particular, negative rather than positive major life events (e.g., Andersen & Williams, 1999; Maddison & Prapavessis, 2005; Noh, Morris, & Andersen, 2005; Petrie, 1992; Rogers & Landers, 2005). However, it is important to note that negative major life events have only accounted for a small amount of the variance in injury occurrence, typically less than 15%. As a result of what appears to be a rather weak relationship between negative major life events and injury occurrence and in an effort to account for additional variance, researchers have examined the variables that may moderate this relationship (i.e., affect the strength of the relationship between negative major life events and injury occurrence; cf. Baron & Kenny, 1986). Findings have demonstrated that certain personality traits (e.g., sensation seeking and dispositional optimism) and coping resources (e.g., psychological skills and social support) interact with major life events to influence athletes’ vulnerability or resiliency to injury (e.g., Ford, Eklund, & Gordon, 2000; Maddison & Prapavessis, 2005; Patterson, Smith, Everett, & Ptacek, 1998; Rogers & Landers, 2005; Smith, Ptacek,
& Smoll, 1992; Smith, Smoll, & Ptacek, 1990). For example, Smith et al. (1990) demonstrated that athletes who were low in both social support and psychological skills were more vulnerable to injury from negative major life events than athletes with the opposite profile, and accounted for a larger 30% of the variance in injury occurrence.

Wiese-Bjornstal et al.’s (1998) integrated model extends Williams and Andersen’s (1998) model of the prediction of sport injury by describing injured athletes’ responses to, and rehabilitation from, sport injury. Wiese-Bjornstal et al.’s (1998) model suggests that both pre-injury and post-injury factors moderate athletes’ cognitive, emotional and behavioural responses to injury, which are mediated by the process of appraisal. Pre-injury factors include personality, history of stressors, and coping resources. Post-injury factors include personal (e.g., injury type and severity) and situational variables (e.g., social support and rehabilitation environment). As a stress-process based model that embraces the concept of change, athletes’ physical and psychological recovery from injury is viewed as a dynamic, interactive process in which cognitions, emotions, and behaviours are explained within a cyclical framework (Wiese-Bjornstal et al., 1998).

Considering that injury has been described as a significant source of strain (Tracey, 2003), it is not surprising that the majority of research that has sought to evaluate Wiese-Bjornstal et al.’s (1998) model has focused on the emotional responses experienced and coping strategies used by athletes over the course of their recovery from injury (e.g., Bianco, 2001; Bianco, Malo, & Orlick, 1999; Carson & Polman, 2008; Evans, Hardy, & Fleming, 2000; Gallagher & Gardner, 2007; Gould, Udry, Bridges, & Beck, 1997b; Johnston & Carroll, 1998a; Mankad, Gordon, & Wallman, 2009; McDonald & Hardy, 1990; Podlog & Eklund, 2006; Quinn &
Fallon, 1999; Udry, 1997; Udry, Gould, Bridges, & Beck, 1997; Tracey, 2003). In relation to injured athletes’ emotional responses, this research has generally supported the transient nature of these responses. For example, it suggests that shock, anxiety, anger, apprehension, depression, and feelings of helplessness are prevalent at injury onset, whereas frustration, relief, jealousy, happiness, guilt, and apathy characterise athletes’ responses during their rehabilitation from injury. Impatience, re-injury anxiety, excitement, and fluctuating levels of confidence have been reported to replace these emotions once athletes return to competitive sport. In addition, researchers have also examined the personal (e.g., athletic identity; Brewer, 1993) and situational variables (e.g., social support; Bianco, 2001) that may indirectly influence athletes’ emotional responses to injury. In relation to injured athletes’ use of coping strategies, research has generally shown injured athletes to employ problem-focused coping strategies such as planning and active coping (e.g., Gould et al., 1997b; Quinn & Fallon, 1999; Udry, 1997), which have recently been found to increase confidence and autonomy as well as decrease negative mood states (e.g., Carson & Polman, 2008; Gallagher & Gardner, 2007). Furthermore, researchers have started to explore the myriad of factors that may influence injured athletes use of coping strategies, including cognitive appraisal (Albinson & Petrie, 2003). Indeed, Albinson and Petrie found athletes who appraise their injury as stressful are more likely to employ coping strategies that deal directly with the injury (i.e., problem-focused coping).

Although Williams and Andersen’s (1998) model suggests that personality traits contribute to the prediction of injury occurrence, and Wiese-Bjornstal et al.’s (1998) model suggests that this pre-injury variable can affect injured athletes’ responses to injury, few researchers in the psychology of sport injury literature have
examined systematically the effect of specific personality traits pre-injury or post-injury—particularly those that reflect a resilient disposition. This is surprising considering that resilience has often been associated with ‘bouncing back’ from various forms of adversity, which can include negative major life events (i.e., a significant predictor of injury) and injury itself (Galli & Vealey, 2008). One pathway to resilience according to Bonanno (2004) is what Kobasa (1979) conceptualised as the personality trait of hardiness. Kobasa observed that those individuals who experience adversity without experiencing any negative health implications were characterised by hardiness, which she found to reflect three resilient attitudes: commitment, control and challenge (i.e., the 3C’s of hardiness). Put simply, individuals high in hardiness or high-hardy individuals’ feel deeply involved in or committed to the activities in their lives, believe that they can control the events that they experience, and consider change as an exciting challenge to further development.

Since Kobasa’s (1979) pioneering study, the personality trait of hardiness has become established in a number of areas, including health psychology (e.g., Maddi, 2002), positive psychology (e.g., Maddi, 2006), military psychology (e.g., Maddi, 2007) and organisational psychology (e.g., Maddi, 1997b), which according to Maddi (2005) has resulted in excess of 1,000 empirical studies (for reviews, see Beehr & Bowling, 2005; Funk, 1992; Ouellette, 1993; Maddi, 2002, 2006; Maddi & Khoshaba, 2004). This research has explored the main and moderating effects of hardiness on various health and performance outcomes, and the mechanisms through which hardiness influenced these outcomes. Indeed, although research consistently demonstrates hardiness to be a negative predictor of psychological and physical strain and a positive predictor of health and performance criteria (e.g., Bartone,
Ursano, Wright, & Ingraham, 1989; DeNeve & Cooper, 1998; Maddi, 1987, 1999; Maddi & Hess, 1992; Maddi & Khoshaba, 1994; Maddi, Khoshaba, Persico, Lu, Harvey, & Bleecker, 2002; Westman, 1990), there is a current divide between researchers as to whether hardiness moderates the relationship between stressful major life events and various health and performance outcomes. For example, some researchers have failed to find the expected stress-buffering effects of hardiness (e.g., Funk & Houston, 1987; King, King, Fairbank, Keane, & Adams, 1998), whereas others have revealed significant moderating effects (e.g., Bartone, 1999; Westman, 1990). Although the failure to consistently find moderating effects has led some scholars to conclude that hardiness does not buffer stress (e.g., Funk, 1992; Funk & Houston, 1987), Hull et al. (1987) reported that it requires more systematic research attention. Researchers have also identified the mechanisms by which hardiness may lead to maintained and/or enhanced health and performance under stressful circumstances. Such mechanisms include adaptive appraisal, problem- and emotion-focused coping strategies, the giving and receiving of social support, and engaging in positive (e.g., adequate nutrition, exercise, and relaxation) while avoiding negative health practices such as alcohol and drug use (e.g., Florian, Mikulincer, & Taubman, 1995; Maddi & Hightower, 1999; Maddi, Wadhwa, & Haire, 1996; Rhodewalt & Agustsdottir, 1984; Rhodewalt & Zone, 1989; Wiebe & McCallum, 1986; Williams, Wiebe, & Smith, 1992).

Considering that hardiness was originally proposed by Kobasa (1979) to buffer the detrimental effects of major life events, which are a significant predictor of injury occurrence (e.g., Andersen & Williams, 1999), and has been shown to be negatively associated with negative strain reactions such as depression (e.g., Funk & Houston, 1987), which has direct relevance to athletes’ responses to injury (e.g.,
Appaneal, Rockhill, Perna, & Roh, 2009), it is surprising that this resilient
disposition has not been afforded more research attention in the psychology of sport
injury literature. The few researchers who have investigated hardiness in this area of
research have found promising results: Hardiness was found to negatively predict
sport injury, positively moderate the detrimental effects of major life events on
subsequent injury, and have a favourable effect on athletes’ post-injury psychological
responses (Ford et al., 2000; Grove, Stewart, & Gordon, 1990). In light of these
findings and the hypothesised effect of hardiness (Kobasa, 1979), the purpose of this
study was to explore the effect of hardiness throughout the full temporal sport injury
process (i.e., the prediction of, and response to, sport injury). Specifically, this study
aimed to examine the effect of major life events and hardiness on the prediction of
injury occurrence, and the effect of hardiness on how athletes’ psychologically
respond to and cope with injury over time. As far as the author is aware no
researchers have yet fully integrated these two distinct but related lines of research to
provide a more complete picture of the sport injury process. Brewer (2007) recently
reported, “By integrating research on the causes and consequences of sport injury, a
more complete picture of sport injury is likely to result” (p. 418).

Consistent with Williams and Andersen’s (1998) model and associated
research (e.g., Ford et al., 2000; Rogers & Landers, 2005), the following hypotheses
were established with regard to the prediction of injury occurrence: (a) an increase in
negative rather than positive major life events will increase the likelihood of injury
occurrence; (b) an increase in hardiness will decrease the likelihood of injury
occurrence; and, (c) hardiness will moderate the relationship between negative major
life events and injury occurrence (i.e., as hardiness increases, the strength of the
relationship between negative major life events and injury occurrence will decrease).
In line with Wiese-Bjornstal et al.’s (1998) model and associated research (e.g., Florian et al., 1995; Grove et al., 1990), the following hypotheses were forwarded in terms of athletes’ responses to injury over time: (a) high-hardy athletes would experience less intense psychological responses than their low-hardy counterparts; (b) high-hardy athletes would use more problem- and emotion-focused coping strategies and less avoidance coping than their low-hardy counterparts; and, (c) psychological responses and coping strategies will vary as a function of the stage of recovery (i.e., injury onset, during rehabilitation, and return to competitive sport).

**Method**

**Participants**

The participants (n=694) were drawn from five sports institutions based within the United Kingdom. The participants represented eight team and 18 individual sports from recreational to international standards of competition, with an average of three years experience at their current competitive level. The mean age was 19.17 (SD = 1.69 years) and 56% of the sample was male. From the total sample, 104 athletes incurred a sport injury, which included fractures, dislocations, strains, and sprains of different body parts. Time loss from training and competition ranged from 14 to 504 days (M days = 49.90; SD = 81.35). The injured participants represented eight team and 10 individual sports from recreational to international standards of competition. Participants had an average of three years experience at their current competitive level. The mean age was 19.22 (SD = 1.10 years) and 53% of the sample was male.

**Measures**

*Major life events* (see Appendix 1). The Life Events Survey for Collegiate Athletes (LESCA) was used pre-injury to measure major life events (Petrie, 1992).
The scale comprises 69 major life events. Participants rated the perceived impact and desirability of each event they had encountered in the last 12 months on an 8-point Likert scale, anchored at -4 (extremely negative) and +4 (extremely positive). Positive and negative major life event scores were calculated by summing the respective impact scores. A total major life event score was derived by summing the absolute values for positive and negative major life events. Petrie (1992) reported 1-week test-retest reliabilities ranging from .76 to .84, and 8-week test-retest reliabilities ranging from .48 to .72. Petrie also provided evidence of predictive, discriminant and convergent validity.

**Hardiness** (see Appendix 2). The Dispositional Resilience Scale (DRS) was used pre-injury to measure hardiness and its three subcomponents: commitment, control, and challenge (Bartone et al., 1989). The scale consists of 45 statements about life in general that individuals often feel differently about (15 items per subcomponent). Participants were asked to indicate the truthfulness of each statement on a 4-point Likert scale anchored at 0 (not at all true) and 3 (completely true). Scores for each subcomponent range from 0 to 45. The composite hardiness score ranges between 0 and 135. Cronbach’s alpha coefficients of .85 for overall hardiness, .75 for commitment, .66 for control, and .62 for challenge have been reported (Bartone et al., 1989).

**Coping strategies** (see Appendix 3). A situational-specific version of the COPE was used post-injury to measure coping strategies over time (Carver, Scheier, & Weintraub, 1989). The COPE consists of 13 coping strategies with four items each. Participants were required to respond to each item on a 4-point Likert scale anchored at 1 (I am not doing this at all) and 4 (I am doing this a lot). Cronbach’s alpha coefficients ranging from .45 to .92 have been reported (Carver et al., 1989).
Consistent with conceptual models of coping (Hoar, Kowalski, Gaudreau, & Crocker, 2006), previous injury research (Quinn & Fallon, 1999), and a series of second-order factor analyses (Ingledew, Hardy, Cooper, & Jemal, 1996; Litman, 2006; Lyne & Roger, 2000; Stowell, Kiecolt-Glaser, & Glaser, 2001), the 13 coping strategies were collapsed into three higher-order factors: (a) **problem-focused coping** (i.e., positive reinterpretation and growth, planning, active coping, suppression of competing activities, restraint coping, and acceptance); (b) **emotion-focused coping** (i.e., seeking social support for emotional reasons, focus on and venting of emotions, and seeking social support for instrumental reasons); and (c) **avoidance coping** (i.e., behavioural disengagement, denial, and mental disengagement). The coping strategy **turning to religion** was excluded as researchers at present are unclear what function it serves (Carver et al., 1989; Stowell et al., 2001) and have demonstrated that it failed to load on any derived factors (Litman, 2006; Lyne & Roger, 2000).

**Psychological responses** (see Appendix 4). The Psychological Responses to Sport Injury Inventory (PRSII) was used to measure athletes’ post-injury psychological responses (Evans, Hardy, Mitchell, & Rees, 2008). The scale consists of six subscales with four items each (apart from Reorganisation that consists of three items): Devastation, Dispirited, Reorganisation, Feeling Cheated, Restlessness and Isolation. Participants were asked to indicate the extent to which each statement reflected how they presently feel on a 5-point Likert scale anchored at 1 (**strongly disagree**) and 5 (**strongly agree**). Each subscale score (with the exception of Reorganisation) ranges from a low of 4 to a high of 20. For Reorganisation this equates to a low of 3 and a high of 15. The PRSII has been shown to possess psychometric integrity, including both content and predictive validity (Evans et al., 2008).
Injury. Consistent with Williams and Andersen’s (1998) stress-based model of injury prediction and associated research (e.g., Johnson, Ekengren, & Anderson, 2005; Rogers & Landers, 2005), the number of injuries sustained by the participants served as the outcome variable. An injury was defined as a medical problem resulting from sport participation that prevented normal training and competition for a minimum period of two weeks. Minor scrapes and bruises that may require certain modifications (e.g., strapping or protective garments) to train and compete were not classified as injuries (Andersen & Williams, 1999; Appaneal et al., 2009).

Procedure

Five sports institutions within the United Kingdom were approached to gain access to athletes that were asymptomatic. All five institutions agreed that the author could approach their athletes. A number of group sessions were then scheduled and undertaken at each institution to inform the athletes of the nature of the study and to explain what their involvement would entail. Once volunteers had been identified, written informed consent was obtained in line with the author’s University Research Ethics Committee. Participants were then required to complete a demographic data sheet. Pre-injury baseline questionnaires were completed thereafter (i.e., LESCA and DRS), which were counterbalanced (i.e., ordered randomly) and included standardised instructions based upon the recommendations of Petrie (1992) and Bartone et al. (1989).

The author monitored and recorded the participants’ injury status for two years (i.e., September 2006 until September 2008) by contacting them on a weekly basis after scheduled training sessions or competitions. If an athlete became injured, they were asked to complete the PRSII and COPE at three time points: (a) within the first week of their injury occurrence, (b) midway through their rehabilitation, and (c)
within the first week of their return to competitive sport. During the first time point a number of other details were also recorded. That is, the date of injury occurrence, the type and location of the injury, and the estimated duration for recovery (i.e., the approximated number of weeks the athlete would be injured and unable to participate in normal training and competition). Post-injury measures were counterbalanced and included standardised instructions based upon the recommendations of Evans et al. (2008) and Carver et al. (1989).

Data analysis

Data analysis involved five stages. First, data screening procedures were conducted to investigate the accuracy of the data and statistical assumptions. Second, a one-way multivariate analysis of variance (MANOVA) was conducted to examine the differences between injured and non-injured athletes on positive major life events, negative major life event and hardiness. Third, hierarchical logistic regression was used to predict the probability of incurring an injury (Tabachnick & Fidell, 2001). Specifically, this analysis assessed the contribution of major life events and hardiness on injury status using the Wald statistic and odds ratio (OR) for interpretation with its respective confidence intervals (CI). Two-way interaction terms were also examined (i.e., Major life events x Hardiness). Each predictor was mean-centred to avoid multicollinearity and to meaningfully interpret the regression coefficients. Fourth, a one-way MANOVA was conducted to examine the differences between high-hardy and low-hardy injured athletes on negative major life events, positive major life events and severity of injury (i.e., time loss). Finally, a two-way (Hardiness x Time) MANOVA with repeated measures on the second factor was used to assess injured athletes’ responses. This analysis examined the interaction and main effects of hardiness and time on the dependent variables (Tabachnick & Fidell,
Follow up Bonferroni corrected pairwise comparison tests were used to isolate mean differences. Data analysis was performed using SPSS 17.0 for Windows.

Results

Prediction of Sport Injury

Preliminary data analysis. Accurate data entry on all variables of interest was obtained from 694 athletes. From the total sample, 104 athletes incurred a sport injury. All injuries were diagnosed by a doctor, nurse, or physiotherapist and time loss ranged from 14 to 504 days ($M$ days = 49.90; $SD$ = 81.35). None of the injured participants reported experiencing more than one injury. Consequently, injury outcome was treated as a binary variable (0 = non-injured, 1 = injured). Total major life events were found to be highly correlated with negative major life events ($r = .85$); therefore, total major life events was considered redundant and omitted from the main analyses (Tabachnick & Fidell, 2001). A one-way MANOVA revealed a statistically significant difference between injured and non-injured athletes (Pillai’s trace = .217, $F(3, 428) = 63.56, p < .001, \eta^2 = .217$). Injured athletes reported significantly less hardiness, $F(1, 692) = 36.95, p < .001, \eta^2 = .051$, and significantly more negative major life events, $F(1, 692) = 148.89, p < .001, \eta^2 = .177$. No significant difference was found between groups for positive major life events.

Main effects. Negative major life events (Wald test = 84.591, $p < .001$; OR = 1.070, CI = 1.054, 1.085) and hardiness (Wald test = 32.922, $p < .001$; OR = 0.947, CI = 0.930, 0.965) were shown to significantly contribute to the prediction of injury status. That is, as negative major life events increased, the likelihood of injury occurrence also increased. In contrast, as hardiness increased, the likelihood of injury occurrence decreased. Positive major life events did not significantly contribute to
the prediction of sport injury (Wald test = 3.403, \( p = .065 \); OR = 1.016, CI = 0.999, 1.034). Consistent with the procedures outlined by Rogers and Landers (2005) and associated research that has demonstrated the importance of negative major life events towards the prediction of injury occurrence (e.g., Andersen & Williams, 1999; Maddison & Prapavessis, 2005), the contribution of positive major life events and hardiness over and above negative major life events was also examined. Findings revealed that positive major life events failed to contribute to the prediction of sport injury over and above negative major life events (Wald test = 0.133, \( p = .715 \); OR = 0.996, CI = 0.999, 1.034), whereas hardiness was shown to significantly contribute to the prediction of injury status over and above negative major life events (Wald test = 27.698, \( p < .001 \); OR = 0.945, CI = 0.925, 0.965).

Two-way interaction term. The two-way interaction term between negative major life events and hardiness was found to significantly contribute to the prediction of injury status (Wald test = 24.100, \( p < .001 \); OR = 0.996, CI = 0.994, 0.997). Furthermore, the OR for this interaction suggested that with a one-unit increase in hardiness, the affect of negative major life events on injury status is decreased by a multiplicative factor of 0.996. To demonstrate this interaction, hardiness (mean-centred) was increased by one unit (Jaccard, 2001). As a result, the OR for negative major life events was 1.059, which, compared to the OR of 1.063 in the analysis with hardiness mean-centred, represented the impact of negative major life events on injury status when there was a one unit increase in hardiness (1.059/1.063 = 0.996). Figure 3 illustrates this interaction by depicted the predicted log odds for hardiness at three levels (Jaccard, 2001): low (i.e., 1 SD below the mean), medium (i.e., mean) and high (i.e., 1 SD above the mean).
Responses to Sport Injury

Preliminary data analysis. From the 104 injured athletes, 100 successfully completed post-injury measures that examined psychological responses and coping strategies over time. Four athletes were removed from the analysis because of incomplete data. A median split was performed on the composite hardiness scale (Bartone et al., 1989; Maddi, 1999; Maddi & Hightower, 1999), categorising participants into those who were low-hardy or low in hardness (n=50) and high-hardy or high in hardiness (n=46). Four participants were found to score the median (i.e., 78) and were removed from the analysis. No univariate or multivariate outliers
(Mahalanobis distance) were identified. The assumptions of multivariate normality, linearity, multicollinearity, and singularity were met. Although satisfied at a univariate level (Levene’s test, $F_{\text{max}}$ ratios), homogeneity of variance-covariance was violated at the multivariate level (Box’s M). Therefore, Pillai’s trace was selected as the multivariate statistic because of its robustness against violated assumptions (Tabachnick & Fidell, 2001). A one-way MANOVA revealed a statistically significant difference between high-hardy and low-hardy injured athletes on negative major life events, positive major life events and injury severity (Pillai’s trace = .100, $F(3, 92) = 3.42, p < .05, \eta^2 = .100$). High-hardy injured athletes reported significantly less negative major life events than their low-hardy counterparts, $F(1, 94) = 6.69, p < .05, \eta^2 = .066$, and significantly more injury time loss, $F(1, 94) = 4.10, p < .05, \eta^2 = .042$. No significant difference was found between groups for positive major life events.

**Interaction effects.** Non-significant interactions between hardiness and time were found (Pillai’s trace = .195, $F(18, 77) = 1.04, p > .05, \eta^2 = .195$). This finding suggests similarities in the temporal patterning of the responses of hardy and non-hardy participants.

**Hardiness main effects.** Findings revealed a significant main effect for hardiness (Pillai’s trace = .732, $F(9, 86) = 26.11, p < .001, \eta^2 = .732$). Follow-up ANOVAs indicated differences between high-hardy and low-hardy groups for devastation, $F(1, 94) = 14.74, p < .001, \eta^2 = .136$; dispirited, $F(1, 94) = 28.25, p < .001, \eta^2 = .231$; reorganisation, $F(1, 94) = 82.12, p < .001, \eta^2 = .466$; problem-focused coping, $F(1, 94) = 73.93, p < .001, \eta^2 = .440$; emotion-focused coping, $F(1, 94) = 6.60, p < .05, \eta^2 = .066$; and avoidance coping, $F(1, 94) = 57.817, p < .001, \eta^2 = .381$. These findings suggest that hardy participants were less devastated, less
dispirited, more reorganised, and used more problem- and emotion-focused coping and less avoidance coping. Non-significant effects were found for feeling cheated, isolation, and restlessness. Table 1 illustrates the results for the main effects of hardiness.

Table 1

*Overall means and standard deviations for hardiness groups across post-injury responses*

<table>
<thead>
<tr>
<th>Post-injury Responses</th>
<th>Low hardiness</th>
<th>High hardiness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Devastation</td>
<td>9.05</td>
<td>2.84</td>
</tr>
<tr>
<td>Dispirited</td>
<td>9.85</td>
<td>2.92</td>
</tr>
<tr>
<td>Reorganisation</td>
<td>7.95</td>
<td>2.62</td>
</tr>
<tr>
<td>Feeling cheated</td>
<td>8.15</td>
<td>3.36</td>
</tr>
<tr>
<td>Restlessness</td>
<td>8.78</td>
<td>2.38</td>
</tr>
<tr>
<td>Isolation</td>
<td>7.75</td>
<td>2.72</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>46.04</td>
<td>8.84</td>
</tr>
<tr>
<td>Emotion-focused coping</td>
<td>21.40</td>
<td>6.17</td>
</tr>
<tr>
<td>Avoidance coping</td>
<td>21.73</td>
<td>3.00</td>
</tr>
</tbody>
</table>

Note: * Significance difference, $p < .05$

*Time main effects.* The assumption of sphericity was violated in some cases (Mauchly’s test) in the repeated measures analysis; therefore, the Greenhouse-Geisser correction was applied in these cases (Tabachnick & Fidell, 2001).

MANOVA revealed a significant main effect for time (Pillai’s trace = .952, $F(18, 77) = 84.23$, $p < .001$, $\eta^2 = .952$). Follow up ANOVA’s identified changes over time for devastation, $F(2, 188) = 260.97$, $p < .001$, $\eta^2 = .732$; dispirited, $F(1.79, 168.60) =$ 
111.65, $p < .001$, $\eta^2 = .543$; reorganisation, $F(2, 188) = 446.36, p < .001$, $\eta^2 = .826$; feeling cheated, $F(1.847, 173.611) = 83.31, p < .001$, $\eta^2 = .470$; isolation, $F(1.854, 174.28) = 64.13, p < .001$, $\eta^2 = .406$; restlessness, $F(2, 188) = 5.33, p < .01$, $\eta^2 = .054$; problem-focused coping, $F(1.807, 169.88) = 4.99, p < .01$, $\eta^2 = .050$; emotion-focused coping, $F(1.80, 168.73) = 20.114, p < .001$, $\eta^2 = .176$; and avoidance coping, $F(2, 188) = 4.32, p < .05$, $\eta^2 = .044$. Bonferroni corrected pairwise comparisons revealed that devastation, dispirited, feeling cheated, and isolation significantly decreased from Time 1 (i.e., injury onset) to Time 2 (i.e., rehabilitation), from Time 2 to Time 3 (i.e., return to competitive sport), and from Time 1 to Time 3. Reorganisation significantly increased over the three time points. Restlessness significantly decreased from Time 1 to Time 3. Problem-focused coping significantly increased from Time 1 to Time 2. Emotion-focused coping significantly decreased from Time 1 to Time 3 and from Time 2 to Time 3. Finally, avoidance-focused coping significantly decreased from Time 2 to Time 3. Taken together, these findings demonstrate the transient nature of athletes’ responses post-injury. Table 2 illustrates the results for the main effects for time.
Table 2

Means and standard deviations for post-injury responses across each time point

<table>
<thead>
<tr>
<th>Post-injury Responses</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Devastation</td>
<td>11.49</td>
<td>1.55</td>
<td>7.76*</td>
</tr>
<tr>
<td>Dispirited</td>
<td>11.26</td>
<td>2.34</td>
<td>8.84*</td>
</tr>
<tr>
<td>Reorganisation</td>
<td>5.49</td>
<td>1.49</td>
<td>9.44*</td>
</tr>
<tr>
<td>Feeling cheated</td>
<td>9.20</td>
<td>3.05</td>
<td>8.50*</td>
</tr>
<tr>
<td>Restlessness</td>
<td>8.97</td>
<td>2.43</td>
<td>8.53</td>
</tr>
<tr>
<td>Isolation</td>
<td>8.74</td>
<td>2.98</td>
<td>8.02*</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>51.03</td>
<td>11.47</td>
<td>53.74*</td>
</tr>
<tr>
<td>Emotion-focused coping</td>
<td>24.03</td>
<td>7.17</td>
<td>23.82</td>
</tr>
<tr>
<td>Avoidance coping</td>
<td>19.84</td>
<td>3.95</td>
<td>20.51</td>
</tr>
</tbody>
</table>

Note: Time 1 = Injury onset. Time 2 = Rehabilitation. Time 3 = Return to competitive sport. * Significant difference from Time 1 to Time 2, p < .05. ** Significant difference from Time 2 to Time 3, p < .05. + Significance difference from Time 1 to Time 3, p < .05.

Discussion

This study aimed to examine the effect of major life events and hardiness on the prediction of injury occurrence, and the effect of hardiness on how athletes’ psychologically respond to and cope with injury over time. Pre-injury findings revealed that negative major life events and hardiness significantly predicted sport injury, whereas a non-significant effect on injury status was found for positive major life events. Hardiness was also found to moderate the relationship between negative major life events and sport injury. Post-injury findings revealed significant main effects for group (i.e., low-hardy versus high-hardy) and time (i.e., from injury onset, during rehabilitation, and subsequent return to competitive sport) on injured athletes’
psychological responses and use of coping strategies. These results not only support the study’s hypotheses, but also the central tenets of Williams and Andersen’s (1998) and Wiese-Bjornstal et al.’s (1998) models.

In relation to the pre-injury findings, the main effect for negative rather than positive major life events is consistent with the first hypothesis of this study and the majority of research that have found negative major life events to predict injury occurrence. For example, negative major life events have been shown to predict injury occurrence in 196 collegiate athletes participating in a range of sports (Andersen & Williams, 1999), 144 high school varsity soccer athletes (Rogers & Landers, 2005), 105 ballet dancers (Noh et al., 2005) and 470 rugby union and league players (Maddison & Prapavessis, 2005). A possible explanation for this finding is that negative major life events may require a substantial amount of physiological, psychological, and behavioural readjustment (Brown & Harris, 1978; Holmes & Rahe, 1967), which, according to Williams and Andersen’s (1998) model, could exacerbate the mechanism that is proposed to directly lead to injury occurrence (i.e., the stress response). For example, a female competitive rugby union player who is readjusting to the potentially debilitative consequences associated with experiencing many major life events is perhaps more likely to appraise a demanding competitive match as threatening and that she has inadequate resources to cope effectively with its associated demands, which will exacerbate the physiological (e.g., increased muscle tension) and attentional (e.g., narrowing of the visual field) aspects of her stress response and heighten her subsequent risk of becoming injured (Williams & Andersen, 1998). An alternative explanation might be that she is simply distracted by her negative major life events and their possible negative consequences in a non-stressful athletic situation, which could make her more susceptible to injury.
To clarify, rather than experiencing a stressful athletic situation and appraising it as more threatening from experiencing many major life events, she might be distracted by task-irrelevant cognitions associated with her negative major life events, which could increase her risk of injury.

This study also identified hardiness to be an important individual difference variable when examining the prediction of sport injury. Indeed, as hypothesised, hardiness was found to predict injury occurrence (i.e., as hardiness increased, the risk of injury decreased), which may be explained from drawing upon Williams and Andersen’s (1998) model and associated research (e.g., Florian et al., 1995; Rhodewalt & Agustsdottir, 1984; Rhodewalt & Zone, 1989; Westman, 1990). That is, although high-hardy athletes may experience a potentially demanding athletic situation in the same way as low-hardy athletes, they might appraise or re-appraise its associated demands in less stressful terms; therefore, decreasing the severity of the stress response and subsequent risk of injury (Williams & Andersen, 1998). For example, Rhodewalt and Agustsdottir (1984) found high-hardy individuals were more likely than their low-hardy counterparts to appraise stressful events as positive and under their control. This study also found hardiness to moderate the relationship between negative major life events and injury occurrence, which supports this study’s and Kobasa’s (1979) hypothesised effect of this resilient disposition. Indeed, as hardiness increased, the effect of negative major life events on injury occurrence decreased. A potential explanation for this finding is that hardy individuals are proposed to transform major life events into developmental rather than debilitating experiences through a number of mechanisms, including using problem- and emotion-focused coping strategies (Florian et al., 1995; Maddi, 1999; Maddi & Hightower, 1999). Future researchers, therefore, should examine whether coping
mediates the moderating effects of hardiness on the relationship between negative major life events and injury occurrence.

Although this study has shown that hardy athletes are less likely to become injured through the effect of negative major life events, it is important to recognise that there are many other and perhaps more prevalent causes of injuries than proposed by Williams and Andersen’s (1998). Factors such as overuse, fatigue, and improper technique can impact on injury status. However, if high-hardy athletes do become injured through these other means, the post-injury findings suggest that they can facilitate their recovery from injury through adaptive responses (Wiese-Bjornstal et al., 1998). Specifically, as hypothesised, high-hardy athletes were found to be less devastated, less dispirited, and more reorganised than their low-hardy counterparts. This finding is consistent with Grove et al. (1993) who reported that hardiness was negatively associated with tension, depression, and anger, and positively associated with vigor and esteem-related affect in athletes recovering from knee construction surgery. The present findings also revealed that high-hardy athletes use more problem- and emotion-focused coping strategies and less avoidance coping than their low-hardy counterparts, which is consistent with the study’s hypotheses and mainstream hardiness research (e.g., Maddi, 1999; Maddi & Hightower, 1999). The use of these specific coping strategies may also help to explain the aforementioned differences between high-hardy and low-hardy athletes’ psychological responses to injury. For example, low-hardy athletes may have been more devastated and dispirited from using avoidance coping strategies, which is consistent with the recent findings of Gallagher and Gardner (2007) who found a positive correlation between avoidance coping and negative mood states among injured athletes. However, it remains unknown whether the desirable psychological responses experienced by the
high-hardy athletes enabled them to use more adaptive coping strategies and/or whether using the adaptive coping strategies resulted in them experiencing more desirable psychological responses.

A key feature of injured athletes’ responses to injury is their transient nature (Evans & Hardy, 1999), which was supported by the findings in this study. Consistent with Wiese-Bjornstal et al.’s (1998) stress-based model which embraces the concept of change and the study’s hypotheses, athletes’ psychological responses to injury were shown to vary as a function of the stage of recovery. Specifically, the onset of injury was associated with heightened feelings of devastation, dispirited, feeling cheated, restlessness, and isolation, which were found to subside during their rehabilitation and even more so during their return to competitive sport. In contrast, the subscale reorganisation, which is associated with confidence and feeling mentally stronger, was shown to increase during rehabilitation and upon subsequent return to competitive sport. These findings were not unexpected considering that previous research has generally reflected a trend from negative to positive affect over time (e.g., Bianco et al., 1999; Carson & Polman, 2008; Evans, Hardy, et al., 2000; Gallagher & Gardner, 2007; McDonald & Hardy, 1990; Quinn & Fallon, 1999; Tracey, 2003). In addition, the temporal patterning of athletes’ coping strategies was shown to vary relative to the stage of recovery, which is consistent with the study’s hypotheses. Specifically, the use of problem-focused coping increased from injury onset to rehabilitation and remained stable during the return to sport. In contrast, injured athletes’ use of emotion-focused coping and avoidance coping were found to remain relatively stable from injury onset to rehabilitation, but significantly decreased upon the return to competitive sport. Although these findings are consistent with the findings of Udry (1997) and Carson and Polman (2008) who
found the use of coping strategies to vary over time, they contrast with the findings
from other researchers who have shown the use of coping strategies to significantly
decrease as rehabilitation progressed (Johnson & Carroll, 2000) or to remain
relatively stable over time (Quinn & Fallon, 1999). A potential reason for this
inconsistency across studies is that there has been much variability in the frequency
and timing of data collection points. Hence, this inconsistency makes the comparison
of findings across studies problematic. For example, Johnston and Carroll (2000)
assessed injured athletes’ coping strategies at three points over time during their
rehabilitation (i.e., initial physiotherapy appointment, midway point of treatment, and
last physiotherapy appointment), which is inconsistent with this study that not only
examined coping usage during rehabilitation, but also at injury onset and return to
competitive sport. Future researchers, therefore, should aim to reduce the variability
in the frequency and timing of data collection across studies in order to build a more
unified body of literature that can be generalised to the wider athletic population.

The present study had a number of strengths and limitations. An important
strength was that it explored the full temporal sport injury process (i.e., the prediction
of, and response to, sport injury). As far as the author is aware no researchers have
fully integrated these two distinct but related lines of research. Indeed, Brewer
(2007) reported that this approach would provide a more complete picture of the
injury process. Consistent with recent methodological recommendations (e.g., Evans
et al., 2006; Petrie & Falkstein, 1998), the study also provided a prospective and
longitudinal account of the sport injury process rather than a retrospective and cross-
sectional analysis. One other important strength of this study was that it used a
population-specific measure of athletes’ psychological responses to injury. The
preferred measure to-date has been the Profile of Mood States (POMS; McNair,
Lorr, and Droppleman, 1971). However, as Evans and Hardy (1999) suggested, the POMS was not developed in conjunction with any psychological model of injury or indeed for use with injured populations. As a result, the validity of POMS with regard to injured populations has to be questioned. Future researchers, therefore, are strongly encouraged to use population-specific measures that are shown to possess appropriate levels of content validity. Despite these and other strengths of this study (e.g., sample size), it does have a number of limitations. One key limitation is that the pre-injury variables were only assessed at one point in time. Petrie and Falkstein (1998) recommended the importance of measuring pre-injury variables on multiple occasions across the time frame of interest. However, considering this study’s large sample size and that it embraced athletes’ responses to injury, this addition to the methodological design was not considered feasible. Another limitation of this study is that it did not compare injured athletes’ post-injury responses with a matched non-injured control group, which would have helped to support the hypothesis that injury occurrence is the causal factor of negative post-injury psychological responses (cf. Appaneal et al., 2009; Leddy, Lambert, & Ogles, 1994).

There are several avenues for future research. First, the methodological design used in this study needs to be replicated to not only substantiate the current findings, but also to help provide a more unified alliance between pre-injury and post-injury bodies of research. Second, major life events have consistently been shown to increase athletes’ susceptibility to injury, which, according to Williams and Andersen’s (1998) model, occurs through exacerbating the stress response during a potentially demanding athletic situation. However, the processes by which major life events influence the stress response during a stressful competition or training session remains unknown; therefore, future researchers should endeavour to identify these
underlying mechanisms. Third, although hardiness is a potentially important personality trait in moderating the relationship between negative major life events and injury occurrence, neither the design used nor the data produced in this study provide any explanation as to why this phenomenon occurred. Indeed, it is important to not only demonstrate the existence of moderators in the relationship between negative major life events and injury occurrence, but also to explain how they operate. Additional research, therefore, is required to provide a detailed examination of the mechanisms by which high-hardy and low-hardy athletes’ attenuate or exacerbate the impact of major life events. Fourth, considering that hardiness also emerged as an important variable in the post-injury findings, future research should aim to move beyond the mere description of psychological responses and coping strategies identified in this study. That is, future research should deploy methods that capture the contextual richness of injured athletes’ psychological responses and the coping strategies used as well as the complex, dynamic and ongoing interplay that exists among these phenomena (Wiese-Bjornstal et al., 1998). Taken together, and given the complexity of these future recommendations, qualitative methods of data collection would appear particularly fruitful in providing a detailed understanding of this phenomenon (Patton, 2002).
CHAPTER 4:

Major Life Events, Hardiness, Coping Strategies, and Psychological Responses:

A Qualitative Follow-up Study (Study 2)
Abstract

The purpose of this study was to enhance the interpretability and meaningfulness of the findings that emerged from a longitudinal study that explored the prediction of, and response to, sport injury. Specifically, this study aimed to yield a rich and detailed understanding of the perceived processes underlying the pre-injury and post-injury findings and the contexts in which they resided. Ten athletes served as the participants (\(M = 21.7; SD = 1.06\)). Data were collected using semi-structured interviews, and analysed and displayed using composite sequence analysis. Findings revealed that in comparison to their low-hardy counterparts, high-hardy athletes possessed and employed a refined repertoire of cognitive and behavioural problem- and emotion-focused coping strategies that not only enabled them to influence, resolve, and learn from their pre-injury negative major life events, but also facilitated their physical and psychological recovery from injury. These findings have important implications for practitioners and coaches in terms of the structure, timing and content of interventions that aim to increase athletes’ resilience.
Introduction

The first study of this thesis examined the role of the personality trait of hardiness in Williams and Andersen’s (1998) model of the prediction of sport injury, and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of responses to sport injury. Consistent with the central tenets of these models, the findings revealed that negative major life events and hardiness significantly predicted sport injury and that hardiness increased athletes’ resiliency to injury by moderating the relationship between negative major life events and injury occurrence. Post-injury findings demonstrated that high-hardy athletes were less devastated, less dispirited, more reorganised, and used more problem- and emotion-focused coping strategies and less avoidance coping strategies than their low-hardy counterparts. However, despite the strengths of the study, its design and findings could not explain why these phenomena occurred. The purpose of this study, therefore, was to provide a qualitative follow-up that would help to contextualise and uncover the perceived processes underlying the aforementioned findings. Put simply, the purpose of this qualitative follow-up was to, “illuminate the stories behind the quantitative data” (Patton, 2002, p. 558). Indeed, as Patton (2002) reported, “Quantitative and qualitative data can be fruitfully combined to elucidate complimentary aspects of the same phenomena” (p. 558).

Since Rainer Martens’s (1979, 1987) influential papers that encouraged greater diversification of knowledge, the use of qualitative research has become an accepted form of inquiry in mainstream sport psychology (e.g., Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001; Brustad, 2008; Culver, Gilbert, & Trudel, 2003; Dale, 1996; Sparkes, 1998; Strean, 1998) and the psychology of sport injury literature specifically (e.g., Carson & Polman, 2008; Mankad, Gordon, &
Wallman, 2009; Podlog & Eklund, 2006; Tracey, 2008; Vergeer, 2006). Although researchers have yet to use qualitative methods with regard to the prediction of injury occurrence, there has been an increasing use of qualitative research exploring athletes’ responses to, and rehabilitation from, injury. Consistent with other areas of research in sport psychology (Biddle et al., 2001; Brustad, 2008; Culver et al., 2003), researchers in this field have typically employed semi-structured interviews to uncover the complexities underlying certain phenomena (e.g., social support and emotional climate; Bianco, 2001; Mankad et al., 2009). Furthermore, semi-structured interviews have also been used to supplement prior quantitative findings in this area of research. For example, Evans and Hardy (2002a) employed semi-structured interviews in a qualitative follow-up study to explore the perceived mechanisms that underpinned the findings that emerged from a 5-week goal-setting intervention with injured athletes. Not only did the findings provide important insights into the processes accounting for the intervention effects and the utility of semi-structured interviews in sport injury research, but also how qualitative research can enhance the interpretability and meaningfulness of quantitative findings.

The purpose of this follow-up study was to use semi-structured interviews to supplement the findings derived from the first study of this thesis. Although researchers have identified a number of ways in which qualitative and quantitative findings can be combined across or within studies (e.g., Hardy, Jones, & Gould, 1996), the focus of this follow-up qualitative study was to serve the purpose of complementarity (Greene, Caracelli, & Graham, 1989). The goal of complementarity is, “to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon” (Morgan, 1998, p. 258). Put simply, the aim was to enhance the interpretability and meaningfulness of the
findings that emerged from the first study of this thesis. In relation to the pre-injury findings this study aimed to: (a) examine the perceived impact of negative major life events, and (b) elucidate the perceived processes through which hardiness may have moderated the relationship between negative major life events and injury occurrence. With regard to the post-injury findings this study aimed to contextualise and provide a rich and in-depth understanding of how the high-hardy and low-hardy athletes’ responded to and coped with injury over time. Eliciting this type of information could help to provide an empirical framework for the structure, timing and content of interventions designed to lower the likelihood of injury occurrence and/or facilitate recovery from injury.

Method

Participant Selection

A four-step procedure was used to purposively select participants (Patton, 2002). First, high-hardy and low-hardy athletes were identified using theory-based sampling (Patton, 2002), which involved assessing the composite hardiness scores of participants from the first study of this thesis. Consistent with the qualitative procedure outlined by Khoshaba and Maddi (1999), those athletes who scored above the 75th percentile (i.e., 93 or above for this study) for overall hardiness were identified as high-hardy, whereas those who scored below the 25th percentile (i.e., 69 or below for this study) were considered low-hardy. Second, athletes who at the time of this study had recovered from their injuries and returned to competitive sport for in excess of six months were excluded. This criterion was adopted to minimise the effect of inaccuracy of recall (Evans & Hardy, 2002b). Third, maximum variation sampling was used within the hardy and non-hardy groups to capture and describe unique features as well as central themes that cut across several predetermined
characteristics (Patton, 2002). Specifically, the characteristics used to maximise sample variation were gender, sport type, competitive level, and severity of injury (i.e., length of time). However, to facilitate meaningful group comparison, participants were matched across the two hardiness groups. This criterion resulted in each group consisting of males and females, team and individual sports, different standards of competition (e.g., club, regional, national, and international), and injuries that varied in their severity. Fourth, the resulting participants (N = 14) were contacted and requested to complete the Dispositional Resilience Scale (DRS; Bartone, Ursano, Wright, & Ingraham, 1989) to verify their composite hardiness scores. The high-hardy athletes once again scored above the 75th percentile, whereas the low-hardy athletes remained below the 25th percentile. These athletes were subsequently informed of the purpose of the study and were invited to participate. Two athletes from each group could not participate because of various time demands and personal commitments. The remaining 10 athletes all agreed to participate and provided written informed consent in line with the requirements of the author’s University Research Ethics Committee.

Participants. Ten athletes served as the participants. Six were male and four were female, with a mean age of 21.7 (SD = 1.06). They represented a number of team and individual sports (i.e., athletics, cricket, lacrosse, rugby union, soccer, and trampolining) and ranged from club to international levels of performance. The injuries sustained by the participants included a torn posterior cruciate ligament, fractured talus, iliopsoas syndrome, plantar fasciitis, and sprains of different body parts (i.e., shoulder, knee and ankle). All participants had recovered from their injuries and returned to full training and competition. Participant information is provided in Table 3.
Table 3

Participant information

<table>
<thead>
<tr>
<th>Hardiness</th>
<th>Gender</th>
<th>Age</th>
<th>Sport</th>
<th>Competitive level</th>
<th>Injury</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Male</td>
<td>23</td>
<td>Soccer</td>
<td>Regional</td>
<td>Torn posterior cruciate ligament</td>
<td>9 months</td>
</tr>
<tr>
<td>High</td>
<td>Female</td>
<td>22</td>
<td>Trampolining</td>
<td>National</td>
<td>Talus fracture</td>
<td>4 months</td>
</tr>
<tr>
<td>High</td>
<td>Female</td>
<td>21</td>
<td>Lacrosse</td>
<td>Club</td>
<td>Iliopsoas syndrome</td>
<td>2 months</td>
</tr>
<tr>
<td>High</td>
<td>Male</td>
<td>23</td>
<td>Rugby Union</td>
<td>Regional</td>
<td>Sprained shoulder (stretch)</td>
<td>6 weeks</td>
</tr>
<tr>
<td>High</td>
<td>Male</td>
<td>21</td>
<td>Athletics</td>
<td>International</td>
<td>Plantar fasciitis</td>
<td>5 weeks</td>
</tr>
<tr>
<td>Low</td>
<td>Male</td>
<td>20</td>
<td>Soccer</td>
<td>National</td>
<td>Sprained ankle (tear)</td>
<td>10 months</td>
</tr>
<tr>
<td>Low</td>
<td>Male</td>
<td>23</td>
<td>Soccer</td>
<td>Regional</td>
<td>Sprained knee (stretch)</td>
<td>5 months</td>
</tr>
<tr>
<td>Low</td>
<td>Male</td>
<td>21</td>
<td>Soccer</td>
<td>Club</td>
<td>Sprained ankle (tear)</td>
<td>3 months</td>
</tr>
<tr>
<td>Low</td>
<td>Female</td>
<td>22</td>
<td>Cricket</td>
<td>International</td>
<td>Sprained shoulder (stretch)</td>
<td>7 weeks</td>
</tr>
<tr>
<td>Low</td>
<td>Female</td>
<td>21</td>
<td>Athletics</td>
<td>Regional</td>
<td>Sprained ankle (stretch)</td>
<td>5 weeks</td>
</tr>
</tbody>
</table>
Measures

Hardiness (see Appendix 2). The DRS was used to measure hardiness and its three subcomponents: commitment, control, and challenge (Bartone et al., 1989). The scale consists of 45 statements about life in general that individuals often feel differently about (15 items per subcomponent). Participants were asked to indicate the truthfulness of each statement on a 4-point Likert scale anchored at 0 (not at all true) and 3 (completely true). Scores for each subscale range from 0 to 45. The composite hardiness score ranges between 0 and 135. Cronbach’s alpha coefficients of .85 for overall hardiness, .75 for commitment, .66 for control, and .62 for challenge have been reported (Bartone et al., 1989).

Preparation booklet (see Appendix 5). A recent theme in qualitative research has been the inclusion of a preparation booklet to facilitate the interview process by aiding recall (e.g., Hanton, Wadey, & Mellalieu, 2008; Wadey & Hanton, 2008). A preparation booklet, therefore, was developed specifically for this study, which comprised of three main sections. Section one provided an introduction to the study and a general overview of the interview guide. Section two outlined the respective individuals’ results drawn from the first study of this thesis in order to facilitate their recall. Specifically, the results were drawn from the Life Events Survey for Collegiate Athletes (Petrie, 1992), COPE (Carver, Scheier, & Weintraub, 1989), and Psychological Responses to Sport Injury Inventory (Evans, Hardy, Mitchell, & Rees, 2008). The preparation booklet provided these previous findings according to four time-phases: (a) pre-injury, (b) injury onset, (c) rehabilitation, and (d) return to competitive sport. The final section presented the participants with an opportunity to reflect and expand upon their results in preparation for their interview.
Interview guide (see Appendix 6). A semi-structured interview guide was developed from four sources of information: (a) the results generated from the first study of this thesis, (b) psychology of sport injury literature (e.g., Evans et al., 2006; Williams & Andersen, 2007), (c) guidelines on qualitative interviewing (e.g., Biddle et al., 2001; Patton, 2002), and (d) previously employed interview guides (e.g., Gould et al., 1997a; Podlog & Eklund, 2006; Tracey, 2003). Once developed the interview guide was scrutinised by three researchers who were experienced in qualitative data collection. The initial draft of the interview guide was then piloted with an injured soccer player. Based upon the feedback from the interviewee and the researchers who read the interview transcript, only minor changes were made to the wording of a number of questions.

In its final form the interview guide contained seven sections. Section one explained the purpose of the study. Section two aimed to establish rapport with the interviewee by encouraging them to talk descriptively about their general sporting involvement. Section three focused on the negative major life events each participant felt had the greatest impact at the time of their occurrence. The questions in this section focused on the events themselves, their perceived impact, and the processes through which the hardy and non-hardy athletes may have exacerbated or attenuated the relationship between negative major life events and injury occurrence. Sections four-to-six explored the three main phases of athletic injury (i.e., injury onset, rehabilitation, and return to competitive sport) and allowed the participants to describe and contextualise how they responded to and coped within each phase. Finally, section seven concluded the interview and invited the participants to add to any of the issues previously discussed. Probes were used throughout for the purposes of clarification and elaboration (Patton, 2002).
Procedure

In line with recent qualitative studies (e.g., Connaughton, Wadey, Hanton, & Jones, 2008), each participant was sent a copy of their preparation booklet one week prior to their interview. All interviews were conducted face-to-face in an office on a university campus by the author. Although the participants were asked the same questions in the same way, each participant’s response determined the sequencing of the questions. This approach was intended to foster a more open communication with the participants (Patton, 2002). After each interview the process of peer-debriefing was employed with an experienced qualitative researcher, which provided opportunities to test working hypotheses and for the author to clear his mind of thoughts and feelings that may cloud good judgement (Lincoln & Guba, 1985). Each interview lasted between 80 to 120 minutes and was recorded in its entirety. All interviews were transcribed verbatim and subsequently verified by the respective participant to increase the credibility of the findings (Lincoln & Guba, 1985).

Data Analysis

Consistent with temporally defined qualitative research (e.g., Hanton, Cropley, Neil, Mellalieu, & Miles, 2007; Hanton; Cropley, & Lee, 2009; Thomas, Hanton, & Maynard, 2007), the data was analysed and displayed using composite sequence analysis (Miles & Huberman, 1994). This method of qualitative data analysis allows stories, plots, or scenarios to be illustrated as meaningful time-ordered sequences. Data analysis involved six stages. First, the transcripts were read and re-read to ensure content familiarity. Second, unbroken chains of variables (i.e., causal streams; Miles & Huberman, 1994) in the form of raw quotations were identified and coded for each participant within each time phase (i.e., pre-injury, injury onset, rehabilitation, and return to competitive sport). Third, within-case
causal networks for each participant within each time-phase were developed to provide a coherent illustration of the relationships between the variables (Miles & Huberman, 1994). Fourth, the respective within-case causal networks were checked and discussed with each participant to verify that the author’s interpretation was an accurate representation of their experiences (Lincoln & Guba, 1985). No changes were made to the within-case causal networks. Fifth, cross-case causal networks were generated as a result of a comparative analysis for each hardiness group within each time-phase (Miles & Huberman, 1994). The frequency of the specific responses across the participants was also recorded during this phase of the analysis. Finally, cross-case causal networks were collapsed across groups to form two time-ordered composite sequence maps to illuminate the overall findings of the study.

Results and Discussion

Analysis of the data resulted in two composite sequence maps which provide a visual overview of the experiences of the high-hardy and low-hardy athletes (Figures 3 & 4). Each map consists of two major elements: (a) variables linked by arrows illustrating the relationship direction, and (b) a percentage value which reflects the number of participants who identified each variable. The maps illustrate four phases of temporal information (i.e., one pre-injury phase and three post-injury phases). Each phase includes the type of strain reaction experienced (i.e., psychological, behavioural, and/or physiological), the coping strategies used, and, where applicable, the resultant response(s) and overall outcome(s). Due to the direction of the relationship, the reader is encouraged to follow the maps from top to bottom. A descriptive narrative inclusive of verbatim quotations accompanies the maps to meaningfully compare and contrast the two groups for each time phase. The reader is encouraged to consider the narrative first and then the composite sequence
Time Phase I: Pre-Injury

High-hardy and low-hardy athletes reported experiencing a history of negative major life events prior to their injury occurrence. Supporting the content validity of Petrie’s (1992) measure of major life events, these events could be divided into two domains: non-sporting and sporting negative major life events. The non-sporting negative major life events included the death of a close family member, death of a close friend, serious illness to a close family member, partner becoming pregnant, breaking up with partner, partner having an abortion, major change in relationship with friends, sexual difficulties, personal illness, beginning a new school experience, failing an important exam, major change in the amount (more) of academic activity, and inability to find a job. The sporting negative major life events included pressure to lose weight due to participation in sport, not attaining personal goals in sport, major errors/mistakes in actual competition, being cut/dropped from the team, and the continual poor performance of the team. The onset of these negative major life events was reported by the participants to result in a number of negative psychological (e.g., “shock”, “questioning”, “frustration”, “anger”, and “disappointment”), behavioural (i.e., “problems sleeping”, “social withdrawal”, and “stopped eating”), and physiological strain response(s) (i.e., “weight loss”). These results demonstrate that negative major life events require not only behavioural readjustment (Holmes & Rahe, 1967), but also psychological and physiological readjustment (Brown & Harris, 1978). According to Williams and Andersen’s (1998) model, it might be that all or some of these types of readjustment account for, or mediate the relationship between negative major life events and athletes’ stress.
responses during a demanding athletic situation, which in turn will increase the likelihood of sport injury. For example, it might be that sleep deprivation from experiencing many negative major life events affects athletes’ attentional resources (e.g., peripheral narrowing) during a potentially demanding athletic situation, which in turn increases susceptibility to injury (Williams & Andersen, 1998).

Examining the perceived interaction between negative major life events and hardiness in accordance with Williams and Andersen’s (1998) model revealed that certain low-hardy athletes reported that they initially responded to the aforementioned events and subsequent strain responses by denying the existence of the events (40%) or venting their reactions uncontrollably with others (20%). For example, two athletes commented, “I couldn’t believe it. I thought this isn’t real” and “There were tears after in the changing room. I was devastated. I was so upset with myself.” These participants reported that over time they avoided the reality of their situations and resultant responses by mentally disengaging (60%), which was consistent with the initial coping efforts of the other low-hardy athletes (40%). Indeed, all the low-hardy athletes involved themselves in activities that were irrelevant to their events, which included “watching television”, “going out with friends”, and “overtraining.” Although this supports the findings from the first study of this thesis and associated research that has shown low-hardy individuals to use maladaptive avoidance coping strategies such as mental disengagement (e.g., Maddi, 1999; Maddi & Hightower, 1999), this coping strategy was reported by the participants to help lower the intensity (i.e., amount or level of thoughts and feelings experienced) and frequency (i.e., amount of time the thoughts and feelings occupied their mind) of their psychological responses. However, the non-hardy athletes
Figure 4. Low-hardy composite sequence map. ↓ = Lowered; ↑ = heightened.
Figure 5. High-hardy composite sequence map. \(\downarrow\) = Lowered; \(\uparrow\) = heightened.
reported that their mental disengagement only provided temporary relief away from their thoughts and feelings. For example, one low-hardy athlete commented, “I would do anything that would take my mind of it [negative major life event]. Anything, but think about it… But, they [thoughts and feelings] would come back when I was on my own.”

The prolonged use of mental disengagement and the ongoing, intermittent experience of strain led all the low-hardy participants to suggest that their events were never resolved, which over time exacerbated their impact by creating a number of perceived negative outcomes (100%). First, low-hardy athletes reported that they eventually experienced feelings of, “depression”, “isolation” and would now and then “break-down.” For example, one athlete commented, “I was low for a while. I didn’t want to do anything apart from watching T.V. [television]. I just kept thinking what am I going to do now? … I was really depressed and down-heartened by it all.”

Given that researchers have shown negative mood states to be associated with an increased risk of injury occurrence (e.g., Lavallee & Flint, 1996; Thomas & Morris, 1994), it might be that low-hardy athletes’ use of maladaptive coping strategies may have exacerbated the impact of negative major life events on the stress response through their influence on mood states (Williams & Andersen, 1998). Second, low-hardy athletes also reported experiencing, “poor performances” (sport and academic) as a result of their inability to resolve their negative major life events, which, according to Williams and Andersen’s (1998) model, will add to their history of stressors and ultimately increase both the severity of the stress response and the likelihood of injury. Finally, low-hardy athletes also perceived that they experienced, “minor-injuries” from their prolonged use of mental disengagement. One low-hardy athlete provided the following account in which they mentally disengaged by
overtraining, which is consistent with previous research that has shown athletes to use competitive sport as a form of stress management (e.g., Chan & Grossman, 1988; Smith, Scott, & Wiese, 1990; Tracey, 2003):

I know how bad road running is for you and the treadmill, but I didn’t care. I just wanted to run and not think about it [negative major life event]… I need that outlet. And if that goes, everything else tumbles with it… I can’t really explain it, but it’s my way of dealing with things… I can’t talk to people. I am the person who listens rather than dealing with my own problems by talking about them… I’d have music on as well [when I’m running]… I just completely switch off. I did more and more, and that’s when I hurt myself… But, I carried on running, because I was upset and it just got worse and worse until I couldn’t walk. That’s the main reason for my injury.

Considering that Williams and Andersen’s (1998) model is directed more towards acute injuries than overuse injuries, it could be suggested from this finding that low-hardy athletes who experience overuse injuries from their prolonged use of maladaptive coping strategies might be at greater risk of acute injuries. Indeed, it was hypothesised by Williams and Andersen’s (1998) that athletes’ with a history of previous injuries (e.g., overuse injuries) are more likely to increase the severity of their stress response during a demanding athletic situation and as a result their likelihood of incurring an acute injury. Maddison and Prapavessis (2005) also found that athletes with a history of previous injuries were more likely to incur an injury. Taken together, it appears that low-hardy athletes exacerbated the impact of negative major life events by using inappropriate coping strategies that if used over a prolonged period of time perpetuate a number of perceived negative psychological (e.g., depression), behavioural (e.g., poor performances), and physiological (e.g.,
chronic injuries) consequences, which, in accordance with Williams and Andersen’s (1998) model and the findings from the first study of this thesis, might help to explain their vulnerability to injury from a psychosocial perspective.

Consistent with their low-hardy counterparts, some high-hardy athletes (40%) reported that they initially reacted to their negative major life events by venting their psychological responses uncontrollably or intentionally by themselves and/or with others. For example, one athlete reported, “The strategies I used were firstly, tears, crying, letting the emotion out quite heavily over the first few days.” However, in contrast to their low-hardy counterparts, these participants suggested that they would stay committed to their events by firstly reappraising or reframing their significance by placing them into a broader perspective, which is consistent with hardiness research (e.g., Maddi, 1987; Maddi & Khoshaba, 2004). This cognitive, emotion-focused coping strategy was also in line with the initial coping efforts of the other high-hardy athletes (60%) who did not vent their emotional responses. This was reported to lower the intensity and frequency of their psychological and behavioural responses (100%) and, in certain instances, led to a number of perceived positive outcomes (40%). The high-hardy athletes reported using six different perspectives. First, some athletes normalised their events (i.e., commonplace perspective). For example, one athlete recollected, “Being able to confide in them [friends] that deeply about how I feel, it made me think that other people go through this [negative major life event] as well.” Second, some participants adopted the view that things could always be worse (i.e., manageability perspective). For example, one athlete commented, “I just felt that nothing, after the [negative major life event] that happened before I came to University, nothing could affect me as bad as that.” Third, some athletes reported recalling their long-term hopes and aspirations (i.e., personal
One participant stated, “I knew deep down that this is what I’ve got to do to get to where I want.” Fourth, one athlete reported anticipating a time when the event would be over (i.e., time perspective). For example, “I put everything in perspective … I mean it’s only three years.” Fifth, one participant compared and contrasted their event to other global circumstances (i.e., global perspective). For example, “There are poor kids in the world that can’t eat, why am I stressed again?” Sixth, some athletes reported focusing on the positive aspects of an event (i.e., positive perspective). For example, one athlete remarked, “It’s all about thinking positive … You can get something out of everything. You just have to think about it in the right way. There are always positive aspects.”

Once the high-hardy participants had broadened their perspective and lowered their strain reactions, the majority of them (80%) reported that they were then motivated to, “Understand what had happened and why it had happened.” They gained this knowledge by dedicating time to think through their events by themselves and by confiding in others (e.g., parents, coach, friends, partners, and university lecturers) that were understanding and knowledgeable about them and the event. One athlete reported, “Until I understand what I’m thinking I can’t go to them [friends]. Otherwise, I’m just saying things for the sake of it… So, I try and understand what’s happened, and then ask questions to others about why it’s happened.” Increased understanding was reported by a number of high-hardy participants (80%) to eradicate some psychological responses (e.g., “shock”, “questioning”, and “frustration”), which, according to some participants (40%), allowed them to accept the reality of certain events that they perceived were outside of their control (i.e., a perceived positive outcome). For events that they perceived were within their control, however, the majority of high-hardy athletes (60%) reported that they were
motivated to influence and resolve the events by using their increased understanding of them to put a plan-of-action together, which is one strategy consistently used within hardiness intervention programmes (e.g., Maddi, 1987; Maddi, Kahn, & Maddi, 1998). One participant reported, for example, “I’m good at accepting events if they’re out of my control, but if I can do something I will.” Although the content of these plans-of-action were unique to each negative major life event, they had a consistent framework which involved a number of short-term realistic and flexible goals that led to their long term goal of resolving the events.

High-hardy athletes reported that they felt they were able to resolve their negative major life events by working towards their plan-of-action (60%) and obtaining feedback from their active efforts (60%). In line with the types of feedback reported by Maddi and Khoshaba (2004), the high-hardy athletes reported recalling two specific sources of feedback. First, feedback from others (e.g., coach, friends, and/or parents), which included, “people telling you you’re looking good”, “getting noticed by others”, and “your coach telling you that you’re doing well.” Second, the effect of their actions, for example, “improved fitness”, “improved performance”, “carrying myself better”, “feeling normal again” and “feeling more positive.” Indeed, it could be suggested that high-hardy athletes moderated the impact of negative major life events on injury occurrence by the mediating process of coping and the positive states of mind that were derived from this process. This suggestion is consistent with the findings of Williams, Hogan, and Andersen (1993) who found that athletes who experienced positive states of mind were less likely to become injured. In addition, the two sources of feedback also deepened their attitudes of commitment, control, and challenge (60%). For example, participants commented in relation to their level of commitment and control respectively, “I just wanted to do
the sport more. I just wanted to get involved in the sport more. Embody the sport more” and “You can’t be seen to give up. You put more effort in to influence what’s going on. You keep going. Not just for yourself, but for your teammates as well.”

With regard to challenge, the participants reported as a result of their feedback that they continued to consider these stressful circumstances as, “valuable learning curves” and “opportunities for personal development.” Indeed, and consistent with recent research that has shown athletes to grow and develop through adversity (e.g., Connaughton et al., 2008; Galli & Vealey, 2008), certain high-hardy athletes reported that they learned to find a deeper meaning in their sporting and non-sporting lives, that they became more mature or began to recognise that they had a high level of maturity, and were able to renew or develop stronger relationships with their friends and family. For example, two high-hardy athletes commented, “You know who your friends are when something like that happens” and “I never used to have a particularly close relationship with my Mother, but I do now. I think when things have gone wrong over the years and I’ve turned to her, I guess I’ve had a better relationship with her from it.”

Finally, the high-hardy athletes reported that they knew that their negative major life events were resolved when they reached certain perceived positive outcomes, which included, “earning my place back on the team”, “winning matches”, “achieving goals”, “improved academic performance”, and “getting a job.” Participants also suggested that because of these desirable outcomes, they would continue to use the coping strategies employed again in the future. One athlete commented, “Next time, you know if you put the effort in, that you will get something out of it. So, it has a knock on effect for future experiences.” Taken together, these findings suggest that high-hardy athletes appear to attenuate the
impact of negative major life events by effectively regulating the resulting strain responses and then working towards a plan-of-action to influence, resolve, and learn from the events. In accordance with Williams and Andersen’s (1998) model, the cognitive and behavioural emotion- and problem-focused coping strategies used by the hardy athletes to resolve their events appear to or will potentially lower their history of unresolved stressors and subsequent risk of injury.

*Time Phase II: Injury Onset*

Consistent with the reactions of other athletes at injury onset (e.g., Bianco, Malo, & Orlick, 1999; Johnston & Carroll, 1998a; McDonald & Hardy, 1990; Udry, Gould, Bridges, & Beck, 1997), the high-hardy and low-hardy athletes reported that their immediate response was “shock” and “physical pain”, which caused them to “question” what they had done. For example, “What have I done? Why am I in such pain? Why will it not go away?” However, the low-hardy athletes who were still mobile (40%) initially reported dealing with these responses by denying their injury occurrence. Tracey (2003) also found that athletes used denial to downplay the seriousness of their injuries; however, rather than using this strategy as a way to protect themselves and reduce anxiety as they did in her study, the athletes in this study used this coping strategy to continue to compete. One participant remarked, “I wouldn’t accept it [injury]. I didn’t want to quit because I was performing really well at the time. I just went through it [pain]. I carried on … until I couldn’t anymore.” Another athlete provided the following account:

> It was just a niggle. I carried on training as normal… It gradually started getting really uncomfortable and it got to the stage where I had to run on the side of my foot. I was in real pain. I was hobbling around. I thought there is definitely something wrong here. It was there constantly. But, I learned to
ignore it… Some people say injury is all in the mind. So I tried to continue to train… I didn’t want to stop training. When it got to the stage where I couldn’t walk, I thought I better get this sorted.

Focusing on short-term gains rather than long-term consequences, which is an emerging theme in the literature (e.g., Bianco et al., 1999; Podlog & Eklund, 2006), ultimately resulted in increasing the severity of their injury. Once these athletes stopped training and competing because of the increased severity, they then experienced the strain reactions reported by the other high-hardy and low-hardy athletes during the early part of this phase. These responses included “anger”, “annoyance”, “frustration”, “isolation”, and “problems sleeping”, which is consistent with previous research (e.g., Johnston & Carroll, 1998a; Rose & Jevne, 1993; Tracey, 2003; Udry et al., 1997). These negative responses were reported to result from unsympathetic others (e.g., friends and doctors); not being able to train, compete or socialise; missed sporting opportunities (e.g., games, events, and trials); playing well prior to the injury; becoming injured because of an innocuous challenge; and, the severity, pain, and timing of their injury. Despite these specific negative responses being consistent across high-hardy and low-hardy groups, there were also a number of unique reactions experienced by each group. For example, the hardy participants reported feeling, “gutted” from not being able to train or compete and physically “tired” because of their disrupted sleeping patterns. The low-hardy athletes reported, “Thoughts of giving up” and feeling “devastated” from not being able to train or compete and because of the severity of their injury. They also reported, “Feeling low” and “lost identity” from not being able to train or compete, and feelings of “jealousy” from watching others train and compete. For example, one low-hardy athlete reported:
To see another striker come on off the bench, and he’s playing. You’re jealous that he’s playing. Back of your mind, you want the team to do well, but then you think if he scores I am going to go ballistic! I was so devastated at the time. I couldn’t associate myself with the group anymore. It was like I had lost my identity in the team really.

Certain low-hardy athletes (40%) reported initially coping with these demands and the resultant responses by venting them uncontrollably either by themselves or with others; a common response that has been reported in the literature (e.g., Gould, Udry, Bridges, & Beck, 1997b; Udry et al., 1997). For example, “In the ambulance, I was crying, not because of the pain, but because something stopped me playing again.” Consistent with the other low-hardy athletes (60%) and the findings from the first study of this thesis, they then suggested that they avoided dealing with these responses by mentally disengaging (i.e., avoidance coping). Specifically, these athletes reported doing irrelevant activities such as, “playing computer games” and “watching T.V. [television].” However, these activities only provided them with temporary relief away from their thoughts and feelings. One athlete commented, “The moment I was on my own in my room, I’d think about my injury and the feelings of frustration would come back.” As a result of not being able to regulate their psychological responses, the ongoing strain experienced by the low-hardy athletes soon started to negatively impact on non-sporting areas of their life (e.g., academic work, job performance, and personal relations).

Consistent with their low-hardy counterparts, the high-hardy participants reported that their initial coping strategy was to vent their responses (40%). However, this venting was done intentionally by themselves and/or with others so they were able to broaden their perspective by re-appraising or reframing the
significance of their injury; a coping strategy that has been reported in the psychology of sport injury literature (e.g., Bianco et al., 1999; Gould et al., 1997b; Rose & Jevne, 1993; Tracey, 2003). This cognitive, emotion-focused coping strategy was consistent with the other high-hardy athletes (60%) and was reported to lower the intensity and frequency of their psychological and behavioural responses (100%), which not only helps to explain why the high-hardy participants were found to be less devastated and dispirited than their low-hardy counterparts in the first study of this thesis, but also why the resultant strain from their injuries failed to negatively impact upon other non-sporting aspects of their lives. Specifically, the participants reported using three different perspectives. First, some athletes normalised their injury (i.e., commonplace perspective). Two athletes commented, “Injury is part and parcel of the game” and “I realised it’s a common injury amongst 400 metre runners.” Second, a number of participants reported that things could always be worse (i.e., manageability perspective). For example, one hardy athlete remarked, “You have to put it into perspective. It is just an injury. Sure I was at the top of my game … but things could always be worse.” Third, some participants reported that they focused on the positives of being injured and that athletes do recover from injury (i.e., positive perspective). For example, one athlete reported, “I just tried to be positive and looked for the positives in it [being injured]. It allowed me to concentrate on my studying. It gave me the chance to see some friends I haven’t seen in a while.”

Once the high-hardy athletes had addressed their psychological and behavioural responses by broadening their perspective, they then were motivated to increase their understanding of their injury (100%). They sought answers to questions such as why it had occurred. How they could stop it reoccurring again in
the future? How other athletes had dealt with similar injuries? And, what was the approximate timescale for their recovery? Interestingly, health practitioners have reported that those athletes who recover successfully learn about their injury so they can assist in their own recovery (Tracey, 2008). Specifically, the high-hardy athletes in this study reported gathering this information from reading books, consulting internet forums and specialist websites, talking to other athletes who had experienced similar injuries, and seeking professional advice. For example, one athlete recalled, “I did speak to other athletes who had similar injuries. Timescale they had missed and what they did to get themselves back. I also spoke to a friend who as a physio about how to stop this happening again.” In contrast to their low-hardy counterparts, this knowledge led the hardy participants to accept their injury occurrence (100%), which contradicts previous research that has reported that athletes accept their injury and then turn their attention towards recovery (e.g., Bianco et al., 1999; Carson & Polman, 2008; Grove & Gordon, 1995; Rose & Jevne, 1993). Although the high-hardy athletes in this study were fully aware they were injured, they only accepted their injury once they understood all the factors surrounding its occurrence and rehabilitation. One high-hardy athlete reported, “It’s a lot easier to deal with something when you understand it rather than worrying about things you don’t really know about… And because you’ve got more understanding of it [injury] you accept it.”

High-hardy and low-hardy athletes also reported during this phase having difficulty doing, or not being able to do, everyday tasks, a finding that has repeatedly been reported in the injury literature (e.g., Carson & Polman, 2008; Evans & Hardy, 2002b; Gould, Udry, Bridges, & Beck, 1997a; Johnston & Carroll, 1998a; Tracey, 2003). These tasks included “taking a bath”, “getting a drink of water”, “making
dinner”, “walking”, “driving”, “going up and down stairs”, and “going food shopping.” Feelings of frustration from their inability to undertake their normal routine and, for some high-hardy athletes, thoughts about how they would cope with these demands were reported to be widespread during this phase. For example, a low-hardy athlete suggested, “It [injury] makes everything a lot more difficult generally to cope with. Just to do ordinary things. Like getting up and getting a drink of water. It’s so frustrating.” A high-hardy athlete also reported, “I was worried about how I would cope in terms of everyday life. How much hassle would it be to be on crutches all the time? How will it affect my life outside of football? Driving and things like that.” However, certain low-hardy (40%) and high-hardy (80%) athletes reported that the intensity and frequency of these responses were soon lowered once they received practical support from family and friends. This finding is consistent with Gould et al. (1997b) who demonstrated the importance of practical support in helping to assist injured athletes. A low-hardy athlete reported, “My girlfriend was very helpful. She was my taxi really. She gave me lifts up to university and things like that. When I was back home, I could sit on the sofa, and Mum would bring this and that in.” One high-hardy athlete reported:

Work colleagues would give me a lift to work. I relied on my housemates at home to help me. They did my shopping for me. Cooked my food for me … They helped a lot from a practical sense and by accepting that support, it made everything easier.

Time Phase III: Rehabilitation

Many of the psychological responses experienced by the low-hardy athletes in the previous phase (i.e., injury onset) were reported to carry over into this phase, which continued to affect non-sporting aspects of their lives throughout this phase of
their recovery. For example, responses included “questioning” from not fully understanding their injury and why it had occurred, and feelings of “isolation” and “jealousy” from watching others train or compete. Other negative psychological responses experienced early in this phase by both the high-hardy and low-hardy athletes included, “boredom”, “dispirited” and “frustration.” These responses resulted from a perceived lack of progress in their recovery, not being able to train and compete, missing other sporting opportunities, and because of the simplistic nature of the prescribed rehabilitation programme. There were also other reactions experienced exclusively by each group during this phase. Consistent with the findings from the first study of this thesis, the low-hardy group reported “confusion” because their physiotherapist was being too technical; “lacking motivation” because of poor weather conditions and the inability to train, and because it was out of season for some athletes; and, feeling “depressed” because the season had started for some athletes. Although previous researchers have identified the timing of injury onset relative to the competitive season to affect injured athletes’ psychological responses (e.g., Bianco et al., 1999; Gould et al., 1997a; Gayman & Crossman, 2003), these findings demonstrate that the timing of rehabilitation relative to the competitive season also appears to be an important situational factor to consider in future research. In contrast, the high-hardy athletes reported feeling “despair” and “worried” because of their perceived lack of progress in their recovery, and “annoyed” because they were unable to do basic rehabilitation exercises. One high-hardy athlete also reported, “putting weight on” from being unable to exercise, a stressor reported by other injured athletes during their rehabilitation (e.g., Evans & Hardy, 2002a; Evans, Hardy, & Fleming, 2000; Rose & Jevne, 1993).
The low-hardy athletes suggested that they coped with these responses by mentally disengaging (100%), which in this phase included “watching T.V. [television]” and “going out socially more” (e.g., “going to the cinema” and “going out drinking”). Although this coping strategy temporarily lowered the intensity and frequency of their thoughts and feelings, one participant reported, “It was straight back to reality when you walk through your door and you see your trainers on the floor … I’m still injured. It hasn’t gone. It’s so frustrating.” During the early part of this phase this type of avoidance coping was reported by the participants to lead them to behaviourally disengage or non-adhere to their prescribed rehabilitation programme (100%). Two athletes recalled, “I was just sitting there when really I should have been doing my exercises … I’ll do it later. I’ll do it later. But, I wouldn’t” and “Going out with friends would draw me away from the exercises.” As a result, some of these athletes (40%) reported setting unrealistic long-term goals in order to motivate themselves to adhere and to expedite their recovery. However, these goals went against the recommendations of their physiotherapists. One athlete reported, “The time scale he [physiotherapist] gave me was that I wouldn’t be playing again until next season … But the goal I set myself was to get back before the end of the season. At least play one or two games. That’s why I pushed myself.” Athletes have repeatedly been shown to set unrealistic goals during rehabilitation (e.g., Evans & Hardy, 2002b; Johnston & Carroll, 1998a), which in this study led the respective participants to ignore any pain or discomfort by either (a) increasing the intensity, duration, and frequency of their prescribed exercises, or (b) progressing too quickly onto the later stages of their rehabilitation (e.g., running as opposed to walking and performing sport-specific skills as opposed to strengthening exercises). Two low-hardy athletes reported, “I upped the amount of exercises I was doing so I
could get back as quick as possible. I didn’t want to miss out anymore” and “I progressed onto jogging. Probably a little quicker than I maybe should have done … I think that slowed down my recovery.” This finding is consistent with those of Rose and Jevne (1993) who reported that some injured athletes did not recognise or deliberately ignored their body’s messages, which resulted in their injury becoming worse. This non-adherence from either doing too little (60%) or doing too much (40%) was reported by the low-hardy athletes to ultimately slow down the perceived rate of their recovery (100%), which prompted them to increase their level of adherence towards the end of their rehabilitation (100%). All the athletes within the non-hardy group reported this level of adherence towards the end of their recovery provided them with some, albeit low levels of confidence in their injured body part prior to their return to competitive sport (100%).

In contrast to their low-hardy counterparts, the high-hardy participants used problem-focused coping strategies during this phase. Specifically, they were motivated to influence their recovery by setting and working towards long-term and short-term goals (100%), a strategy that has received empirical support (e.g., Carson & Polman, 2008; Evans & Hardy, 2002a; Evans, Hardy, et al., 2000; Gould et al., 1997b). The long-term goal set at the onset of the participants’ rehabilitation was to return to normality. To successfully achieve this goal, they all reported setting and working towards a number of short-term goals (performance and process). These goals focused on the nature of their prescribed exercises (e.g., duration, distance covered, and movements involved) and were readjusted if they experienced any pain or discomfort. For example, certain athletes reported that they aimed to be able to, “twist and turn”, “run to that line and turn”, and “walk without my knee aching.” All the high-hardy athletes suggested that reaching their short-term goals provided them
with two valuable sources of feedback. First, from the effect of their actions, such as “decreased swelling”, “less aching”, “less pain”, “it didn’t hurt as much”, “more strength”, and “increased range of movement.” Second, feedback from others, for example, “He [physiotherapist] said my injury was getting better.” Indeed, previous researchers have also indicated pain, range of motion, and social support as important forms of feedback that informed the participants about their recovery progress (e.g., Johnston & Carroll, 1998a; Rose & Jevne, 1993). As a result of this feedback, and consistent with the first study of this thesis that found high-hardy athletes to be less devastated, less dispirited, and more reorganised, certain high-hardy participants (40%) reported that they started to feel during this phase, “less despairing”, “not worried”, “less dispirited”, “more positive”, “more upbeat”, and “more like myself again.” The majority of the high-hardy participants (60%) also reported that they used this feedback to deepen their hardiness attitudes of commitment, control, and challenge. Specifically, this feedback increased their commitment to their rehabilitation programme, for example, “Obviously the exercises were doing something, so I kept doing them.” However, it also provided them with an increased perception of control over their recovery. For example, one athlete commented, “I had more control over my rehabilitation. … The work I put in paid off. I made a difference.” Finally, an increased sense of challenge was also reported by the participants, for example, “You can always learn something to improve yourself. So, I took a more active role in my recovery.”

Once all the high-hardy participants perceived they had reached their goal of achieving normality, they set and worked towards another long-term goal towards the end of their rehabilitation. That is, to successfully return to competitive sport within a timescale agreed by their physiotherapist. One athlete remarked, “At the
start I wanted to get back just for myself. Just to be normal. But, as you go along you want a goal of getting back to where you were before.” Once again, they reported setting and working towards short-term goals (performance and process), which were readjusted if they experienced any pain or discomfort. For example, one athlete recalled, “I did running once I had progressed from the strengthening exercises. But, after I finished running, it [injury] was swollen and aching … So, I went back to the strengthening exercises.” This is consistent with the findings of Rose and Jevne (1993), which emphasised the importance of injured athletes listening to and acting upon the messages they receive from their body. The goals they set focused on the nature of their prescribed exercises (e.g., duration, intensity, frequency, distance covered, and movements involved). Indeed, as well as focusing on the correct technique, certain participants reported that they also wanted to, “run for five minutes”, “run without any pain”, and “complete a run in a certain time.” One athlete expressed, “I want to be able to strike a ball without feeling any discomfort. I want to be able to control a ball and do some twists, turns, and do some drills as well with no pain.” The majority of these short-term targets also involved simulating various competitive demands to prepare themselves for their return to competitive sport, which is consistent with the findings of Evans, Hardy, et al. (2000) who reported the effectiveness of simulation training for injured athletes towards the latter phase of their rehabilitation. Specifically, the participants aimed to “run on grass and sand with no pain”, “tackle with no pain using tackle bags”, and compete in “mock competition” (e.g., five-a-side soccer, touch rugby) with no pain or discomfort. Achieving these short-terms goals once again provided the athletes with two valuable sources of feedback. First, from the effect of their actions, such as “getting back to full fitness”, “injury not aching”, “I wasn’t feeling any pain” and “having a full range
of movement.” Second, feedback from others, for example, “My physiotherapist said it [injury] couldn’t have healed any better.” The participants reported that this feedback continued to lower the intensity and frequency of their strain reactions (40%), deepened their hardiness attitudes (60%), increased the perceived rate and quality of their recovery (100%), and provided a high level of confidence in their injured body part prior to their return to full training and competition (100%), which is consistent with the high-hardy athletes’ high levels of reorganisation in the first study of this thesis.

Time Phase IV: Return to Competitive Sport

High-hardy and low-hardy athletes reported experiencing a number of negative psychological responses once they returned to competitive sport, which included “frustration” and “jealousy.” However, consistent with the findings of a number of empirical studies, the main psychological response experienced by participants during this phase was re-injury anxiety (e.g., Bianco et al., 1999; Gould et al., 1997a). One high-hardy athlete recollected, “I was anxious whether it [injured limb] would hold up in a tackle. Had I gone back too soon? Will it go again? Will I have to go through the whole rehabilitation again?” Consistent with previous research (e.g., Evans, Hardy, et al., 2000; Podlog & Eklund, 2006; Tracey, 2003), these negative responses were reported by the high-hardy and low-hardy participants to emanate from performing the same technical skill that caused their injury, competing against other competitors, making contact with their injured body part, completing a demanding training session, competing for their position on the team, and overly concerned others. For example, one low-hardy athlete suggested:

The reason why they [team] picked someone much less experienced to go on tour was because they said, “We are worried that your injury is going to
reoccurred”… So, to have that thought in the back of my mind, it was hard to come back.

In contrast to their high-hardy counterparts, the low-hardy athletes also reported experiencing “isolation” from being behind in training, decreased sport “confidence” from not being of the same physical and technical standard as they were prior to their injury, and re-injury “concerns” from experiencing inappropriate banter from friends and going back to competitive sport too early. Interestingly, Gould et al. (1997b) found that patience and taking it slowly was cited by athletes who successfully recovered from injury. Further, certain low-hardy athletes also experienced competitive “anxiety” because they had not competed for a significant length of time. For example, one athlete reported, “I never usually get nervous before I play football. But, when I was coming back I was nervous about coming back and playing … I guess it was because I had been out for such a long time.” The experience of competitive anxiety upon returning to competitive sport is consistent with the findings of Podlog and Eklund (2006), which suggested that injured athletes often experience this emotional response because of the length of their absence from sport.

Although the low-hardy group reported that they did not possess appropriate coping strategies to deal with the psychological responses they experienced in this phase, low levels of confidence in their injured body part from the previous phase (i.e., rehabilitation) coupled with their re-injury anxiety caused them to reflect on their fluctuating levels of adherence (100%). One athlete commented, “When I was doing the rehabilitation my adherence was fluctuating … And when I came back I thought to myself, because I missed out a bit here and a bit there, I wondered if that will make a difference.” This process of reflection was reported to further lower the
confidence they had in their injured body part, which was reported by certain non-high-hardy athletes (60%) to have a negative impact upon their performance on their return to sport (60%). For example, two low-hardy participants recalled, “Not being able to kick with my left foot ruined my game really” and “I was finding it hard to let myself go and actually commit myself fully to completing the action.” Evans, Hardy, et al. (2000) and Johnston and Carroll (1998a) also found that athletes’ resumption of sport participation was associated with negative performance parameters such as being hesitant, holding back, and avoiding injury provoking situations. Certain low-hardy athletes also reported that a lack of confidence in their injury led to minor (re)injuries (40%). For example, one athlete commented, “My confidence was low at that point so I just denied the fact I was injured and threw myself into a tackle … And because of the impact, I hurt my knee again.” This finding is consistent with Podlog and Eklund (2006) who reported that injury flare-ups or injury to another body part was a common form of adversity experienced by injured athletes returning to competitive sport.

In contrast, the high-hardy athletes reported that they coped with their strain reactions in this phase by broadening their perspective (100%). Specifically, they all focused on the positive aspects of their return (i.e., positive perspective), which is consistent with Bianco et al. (1999) and Podlog and Eklund (2006) who found that injured athletes were able to focus on the enjoyable aspects of their return to sport. This cognitive, emotion-focused coping strategy was reported to lower the intensity and frequency of their psychological responses (100%). For example, one athlete commented, “Not focusing on worrying about I could get injured, focusing on just being back. Rather than focusing on getting hurt and going through that again, thinking more positive … Looking forward to competing. Looking forward to
training hard.” Once the high-hardy athletes had lowered the intensity and frequency of their negative psychological responses, the majority of them reported that they then reminded themselves of their rehabilitation adherence (80%). Specifically, this period of recollection transformed any re-injury worries into feelings of confidence in their injured body part. Two athletes commented, “I took on board what the physiotherapist said. I took it step by step … That really helped my confidence” and “The fact that I adhered to my rehabilitation and listened to the professional advice that was given, I was confident that my leg would hold up.” However, the main source of confidence for the high-hardy (80%) and low-hardy athletes (80%) was their injury withstanding tackles or completing a demanding training session, a finding that is consistent with previous research (e.g., Johnston & Carroll, 1998a; Podlog & Eklund, 2006). The high-hardy athletes suggested that this in turn made them more confident that they had fully recovered, whereas the low-hardy athletes only reported increased levels of confidence in their injured body part. For example, one high-hardy athlete recalled, “I had a big tackle on my shoulder and it felt fine. That wasn’t by choice, it just happened. That really helped my confidence … [and] confirmed to me I was totally better.” One low-hardy participant reported, “I’ve had it [injury] knocked a few times. After the first big knock, that’s when my confidence started going up.”

Finally, the high-hardy and low-hardy athletes also reported that during this phase they were able to reflect back on their injury recovery and generate a number of perceived benefits. Indeed, researchers have continued to demonstrate a number of positive consequences, perceived benefits, positive by-products, or positive outcomes from injuries (e.g., Ford & Gordon, 1999; Hurley, Moran, & Guerin, 2007; McMillen & Cook, 2003; Podlog & Eklund, 2006; San Jose, 2003; Udry, 1999; Udry et al.,
1997), which has recently been coined *adversarial growth* (Linley & Joseph, 2004). Although deriving any perceived benefits was challenging for the low-hardy participants because they did not consider their rehabilitation and return to competitive sport had been successful, certain athletes suggest they had built a better rapport with their coach and friends. In contrast, the high-hardy athletes perceived they had derived a number benefits from their injury experiences. Extending Wiese-Bjornstal et al.’s (1998) model that only considers physical and psychological outcomes associated with injury and its rehabilitation, the perceived benefits (or outcomes) reported by the high-hardy participants included having a renewed perspective on their sport, increased knowledge of anatomy and physiology, learning new training methods and techniques, improved sport-specific skills unrelated to their sport (e.g., improved swimming technique during rehabilitation), increased social support network (e.g., physiotherapists and other previously injured athletes), increased perception and strengthening of their social support network, improved ability to sympathise and empathise with injured athletes, and a greater confidence that they have the strategies to cope with adversity. For example, two high-hardy athletes reported, “I probably know my lowest point now during those first 10 days. And I got out of it. So in that respect, I feel positive that if something like that happens again, I know I can deal with it. It’s reassuring” and “When you get injured and you are dependent on others, you learn who is willing to do things for you when you need them. As the saying goes, ‘a friend in need is a friend indeed.’” Extending previous research and consistent with future research recommendations (Udry, 1999), the participants suggested that these perceived benefits were mainly derived from unstructured reflection, attending and paying attention during physiotherapy,
seeking out and accepting the support offered to them from others, and making sure they acknowledged the support providers.

Summary and Conclusions

The purpose of this qualitative study was to enhance the interpretability and meaningfulness of the findings derived from the first study of this thesis. Specifically, it examined the perceived impact of negative major life events, the processes through which hardiness moderated the relationship between negative major life events and injury occurrence, and provided a detailed understanding of how high-hardy and low-hardy athletes’ responded to and coped with injury over time. The findings revealed that negative major life events have a number of perceived physiological, psychological, and behavioural consequences (e.g., Brown & Harris, 1978; Holmes & Rahe, 1967). Indeed, extending Williams and Andersen’s (1998) model and explaining the findings drawn from the first study of this thesis, it might be that these perceived consequences (e.g., difficulty sleeping and weight loss) are the mechanisms by which negative major life events increase the severity of the stress response during a demanding athletic situation and ultimately increase the risk of injury. Future research should aim to further examine what specific physiological, psychological, and/or behavioural strain response(s) actually account for the relationship between negative major life events and the stress response athletes’ experience during an athletic situation. They should then examine what specific domain (e.g., sport and non-sporting) or characteristic (e.g., physically exhausting, uncontrollable, and/or unexpected) of negative major life events is responsible for eliciting the mediating mechanisms that exacerbate the stress response (cf. Brown & Harris, 1978; Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993; Thoits, 1983).
The findings also revealed the perceived processes through which the high-hardy and low-hardy athletes attenuated or exacerbated the impact of negative major life events respectively, which helps to explain how hardiness moderated the relationship between negative major life events and injury occurrence in the first study of this thesis. Specifically, in the present study the high-hardy athletes reported that they were motivated to employ a number of specific cognitive and behavioural problem- and emotion-focused strategies to cope with their negative major life events (e.g., positive reinterpretation and growth, planning, active coping, acceptance, and seeking social support), which reflected their hardiness attitudes of commitment, control and challenge (Maddi, 1987; Maddi & Khoshaba, 2004; Maddi et al., 1998). Specifically, the high-hardy athletes reported staying committed to their negative major life events by reappraising the significance of their events, increasing their understanding of them, and constructing and working towards a plan-of-action to influence (i.e., control) and learn (i.e., challenge) from them. Taken together, these coping strategies enabled the high-hardy athletes to attenuate the impact of negative major life events by regulating the resulting strain responses and then actively resolving the event itself. Consistent with the central tenets of Williams and Andersen’s (1998) model, these perceived mechanisms reported by the hardy athletes have the potential to lower the history of negative major life events and ultimately the risk of injury. Although Williams and Andersen’s (1998) model hypothesises that a history of many stressors will indirectly increase the risk of injury, these findings suggest that a more appropriate hypothesis might be that a history of many unresolved major life events will indirectly increase the risk of injury. In contrast, the low-hardy athletes reported that they exacerbated the impact of their negative major life events by using a number of cognitive and behavioural avoidance coping
strategies such as denial and mental disengagement, which over time created a number of perceived negative outcomes (e.g., depression, poor performances, and minor injuries). These perceived negative outcomes according to Williams and Andersen’s (1998) model are likely to increase the risk of injury.

The pre-injury findings with regard to the coping strategies used by the high-hardy and low-hardy athletes were also consistent with the post-injury findings. Indeed, the injured high-hardy athletes reported that they were able to regulate the strain responses experienced during the onset of their injury by re-appraising the significance of their injury, which enabled them to invest their time in more productive tasks during this stage of recovery (e.g., seek understanding of their injury and concentrate on their academic studies). In terms of their rehabilitation from injury, the high-hardy athletes reported using a number of problem-focused coping strategies (e.g., planning and active coping) to facilitate the rate and quality of their physical and psychological recovery from injury. By broadening their perspective and reflecting upon their level of adherence once they had returned to competitive sport, the high-hardy athletes were not only able to regulate their negative psychological responses and increase their confidence during this phase but were also able to derive a number of perceived benefits from their injury experience. In contrast to their high-hardy counterparts, the low-hardy participants were unable to regulate their psychological responses at the onset of injury and during their rehabilitation from injury, which were reported to negatively impact upon other areas of their lives (e.g., academic work, job performance, and personal relations). During rehabilitation their adherence was also reported to fluctuate from the use of inappropriate coping strategies, which negatively impacted on their physical and psychological recovery from injury. Upon their return to competitive sport, the low-
hardy athletes were again unable to regulate their psychological responses, which negatively impacted upon their level of performance and also caused them to incur (re)injuries. Taken together and substantiating Wiese-Bjornstal et al.’s (1998) model, this study has demonstrated that athletes’ physical and psychological recovery from injury is a dynamic, interactive process characterised by a range of psychological responses and coping strategies that are influenced by a number of personal (e.g., perceived cause and recovery status) and situational factors (e.g., time in season and provision of social support).

The present study had a number of strengths and limitations. The main limitation of this study is its retrospective nature. Indeed, retrospective approaches can suffer from memory decay and result in participants reporting how they normally behave rather than how they actually behaved in a particular situation (Ptacek, Smith, Espe, & Rafferty, 1994; Smith, Leffingwell, & Ptacek, 1999). However, this study did have the added advantage over previous retrospective studies that it was able to facilitate the participants’ recall from developing a preparation booklet that incorporated their results from the first study of this thesis. Furthermore, although interviewing athletes concurrently pre-injury and throughout their recovery from injury may have improved the accuracy of recall, it may also have tainted their experiences. For example, Tracey (2003) reported that she indirectly provided athletes with emotional support from interviewing them during their recovery, which in turn may have impacted upon their responses during subsequent interviews. The main strengths of this follow-up study are that it is the first study to qualitatively examine the full sport injury process, and it also enhanced the interpretability and meaningfulness of the findings derived from the first study of this thesis. In terms of practical application, these findings have important implications for practitioners and
low-hardy athletes in particular in relation to the structure, timing and content of interventions that aim to minimise injury rates and/or facilitate recovery from injury. Indeed, future research should aim to utilise the findings from this study to implement and evaluate a hardiness interventions throughout the sport injury process. Finally, future research should also endeavour to get the perspective of coaches, medical personnel, friends and family pre-injury and post-injury in order to provide a more comprehensive and objective account of the factors that effect the prediction of, and response to, injury.
CHAPTER 5:

Evaluating a Hardiness Intervention Throughout the Sport Injury Process:

An Action Research Study (Study 3)
Abstract

The purpose of this study was to evaluate a hardiness intervention throughout the sport injury process. The intervention aimed to improve the practice of a group of non-injured athletes and an injured athlete by introducing the attitudes and coping strategies associated with hardiness. Twelve asymptomatic players in a men’s varsity football team served as the participants ($M$ age = 20.3; $SD = 1.83$). One player during the pre-injury intervention became injured and subsequently participated in the post-injury intervention. Within the action research framework proposed by Evans, Fleming, and Hardy (2000), a number of methods of data collection were used. The findings are presented as a first-person narrative, incorporating a realist and confessional tale. The pre-injury intervention was found to increase the players’ awareness of how to improve their practice when coping with negative major life events (i.e., a significant predictor of injury occurrence), whereas the post-injury intervention actually improved the practice of one player by facilitating his physical and psychological recovery from injury. These findings have important implications for non-injured and injured athletes that aim to improve their practice by increasing their resilience.
Introduction

Consistent with Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of the responses to sport injury, the first two studies of this thesis revealed that high-hardy athletes are less susceptible to injury after experiencing negative major life events and, if they become injured, can also facilitate their physical and psychological recovery from injury compared to their low-hardy counterparts. The high-hardy athletes were found to elicit these desirable outcomes from possessing resilient attitudes (i.e., commitment, control and challenge) and a refined repertoire of cognitive and behavioural problem- and emotion-focused coping strategies that they were able to deploy pre-injury and post-injury. Specifically, their resilient attitudes appeared to provide them with the motivation to cope with negative major life events and injury occurrence in three progressive phases: (a) re-appraisal of their significance, which lowered negative strain responses and subsequently enabled problem-focused coping; (b) increasing their understanding of them through personal reflections and by confiding in others, which facilitated the formation of a constructive plan-of-action to resolve them; and (c) executing a plan-of-action to ultimately transform them into developmental rather than debilitating experiences, which in turn deepened their hardiness attitudes and ultimately led to a number of perceived positive outcomes. In contrast, their low-hardy athletes were found to exacerbate the impact of negative major life events and injury occurrence by using a number of cognitive and behavioural avoidance coping strategies such as denial and mental disengagement. These strategies over time had a number negative implications both pre-injury (e.g., depression and isolation) and post-injury (e.g., non-adherence and re-injury). Taken together, these findings not only substantiate
the empirical research within the mainstream hardiness literature (for reviews, see Ouellette, 1993; Maddi, 2002, Maddi & Khoshaba, 2004), they also emphasised the need for low-hardy athletes to learn the attitudes and coping strategies used by high-hardy athletes in order to lower their likelihood of, and expedite the rate and quality of their recovery from, injury.

Although sport psychology researchers have yet to evaluate empirically hardiness interventions, training programmes in the mainstream hardiness literature have been examined with traditional efficacy studies, in which participants are randomly assigned to either a treatment or control condition. Maddi (1987) was the first to develop, implement and evaluate the efficacy of a hardiness training programme. Unfortunately, the specifics of the intervention programme are only available through the Hardiness Institute (i.e., through their workbooks that contain narrative, examples, exercises, and checkpoints). The programme aimed to transform stressful situations into opportunities for personal development through developing and implementing plans-of-action, and using the resultant feedback to deepen hardiness attitudes. Using a waiting list control group, Maddi (1987) evaluated the efficacy of the training programme on 27 middle-level managers at the Illinois Bell Telephone company. Findings revealed a significant increase in hardiness and job satisfaction as well as a significant decrease in strain (e.g., anxiety, depression, blood pressure) in the hardiness training group compared to the waiting-list control group of 19 middle-level managers. Extending this study by using relaxation and passive listening control groups, Maddi, Kahn, and Maddi (1998) also evaluated the efficacy of Maddi’s (1987) hardiness training programme. Using 46 lower, middle and upper level managers of a utilities company, they reported that the 18 managers who received the hardiness training showed significantly greater increases in hardiness,
job satisfaction and perceived levels of social support levels, along with significant decreases in subjective strain and illness severity compared to those in the relaxation (N = 12) and passive listening control groups (N = 16). More recently, Maddi, Khoshaba, Jensen, Carter, Lu, and Harvey (2002) evaluated the efficacy of a hardiness training programme with 40 undergraduate students. Expanding upon the previous hardiness intervention programme by including an additional social support component (i.e., the giving and receiving of assistance and encouragement), they found that those students who received the hardiness training showed a significantly greater increase in hardiness and grade point average, and a significantly greater decrease in strain compared to a control group (N = 53) who underwent either a traditional student-enrichment course or a course on leadership training.

Although these studies demonstrate the efficacy of hardiness interventions, researchers have yet to evaluate these training programmes in real-life contexts or specific situations. One methodological approach that lends itself to real-life interventions is ‘action research’ (Reason & Bradbury, 2001), which has been found to be particularly useful in the context of sport injury research (e.g., Evans, Hardy, & Fleming, 2000; Gilbourne, Taylor, Downie, & Newton, 1996). However, despite researchers encouraging its use (e.g., Evans, Mitchell, & Jones, 2006; Evans, Fleming, & Hardy, 2000; Gilbourne, 1999, 2000), action research has yet to become embedded in the mainstream sport psychology research. One explanation for this is the lack of consensus as to what action research actually is and what it involves. In an attempt to make action research more accessible to sport psychology researchers, Evans, Fleming, et al. (2000) provided a framework of characteristics or what they termed minimal criteria to distinguish action research from other forms of research as
well as professional practice. According to Evans, Fleming, et al. (2000, p. 299) action research involves:

(a) an intention and commitment to improvement and/or solving practical problems (Castle, 1994; Cohen & Mannion, 1994; Holter & Schwartz-Barcott, 1993), (b) an intervention (Castle, 1994; Cohen & Manion, 1994), (c) a cycle of critical reflection and action (Carr & Kemmis, 1986; Cohen & Mannion, 1994; McNiff, 1988; Sparkes, 1991), and (d) praxis (committed action giving rise to knowledge; McNiff et al., 1996). It is (e) systematic (Cohen & Mannion, 1994; Kemmis & McTaggart, 1988), (f) strategic (Carr & Kemmis, 1993; McMahon, 1999), (g) collaborative (Holter & Schwartz-Barcott, 1993; Kemmis & McTaggart, 1988; Sparkes, 1991), (h) empowering for participants (Carr and Kemmis, 1993; Sparkes, 1991, and (i) conducted within a mutually accepted ethical framework (McKernan, 1996). Additionally, it must (j) employ recognisable research methods (Tripp, 1990), (k) demonstrate “conscious partiality” (i.e., an explicit awareness of the researcher’s own perspective[s]; Mies, 1993, p. 68), and (i) communicate findings to practitioners/researchers (McNiff et al., 1996).

These criteria suggest that action research is concerned with interventions that seek to bring together strategic action and critical reflection in collaboration with others to produce original knowledge, solutions to practical problems and/or improvements in practice. Put simply, the emphasis is on involvement and improvement (Carr & Kemmis, 1988). It is also clear that action research involves a systematic and cyclical process (i.e., planning, implementing, monitoring, reflecting and evaluating; Carr & Kemmis, 1988; Tinning, 1992), which usually entails identifying a problem, implementing a solution, observing its effects and evaluating the outcomes in the
process of promoting change. Given that the aforementioned criteria have proven useful in an injury context (Evans, Hardy, et al., 2000), I aligned my understanding and located the interventions in this study within this framework of action research.

The purpose of this study was to evaluate a hardiness intervention that aimed to help improve the practice of a group of non-injured football players and an injured athlete. It included both pre-injury and post-injury phases. The pre-injury intervention aimed to increase the players’ awareness of how to improve their practice when coping with negative major life events (i.e., a significant predictor of injury occurrence), which may serve as the basis for future action. In contrast, the aim of the post-injury intervention was to actually improve the practice of one injured player by facilitating his physical and psychological recovery from injury. However, although originally conceived as a hardiness intervention, as the study unfolded other strategies were introduced to facilitate the intervention and to meet the participants’ needs (e.g., different functions of social support). It also aimed to improve the practice of the players’ coach. Collaboration with a Chartered Physiotherapist and Sport Psychologist also facilitated the intervention.

**Method**

**Participants**

*Players.* The participants were 12 asymptomatic players from a men’s varsity football team. The participants completed a four week pre-injury intervention ($M$ age $= 20.3; SD =1.83$). The team, which was made up of 16 players, trained twice (i.e., Monday and Thursday) and competed once per week (i.e., Saturday). Although the intervention started with all 16 players, in the first week four players dropped out because of personal reasons or other commitments. The study began 14 weeks before the end of the season, with 7 home and 7 away games still to play. One week after
the pre-injury intervention had commenced, one player became injured and subsequently participated in a post-injury intervention. The injured player, Mark (pseudonym), was 21 years old and was the central defender and captain of the team. He sustained a tear to his hamstring (i.e., semitendinosus muscle in his left leg) during a competitive league match. No other players became injured during the course of the intervention.

Coach. The coach of the team, Andy (pseudonym), was appointed the varsity Director of Coaching while undertaking an undergraduate degree in Sports Coaching. He was 31 years old and a Union of European Football Associations (UEFA) coach. He began his career as a professional footballer at a Premier League football club in 1996, where he suffered with injuries that resulted in him moving clubs in 1999. In 2001 he moved to another club, but injuries struck again and after failing to regain his place in the side he was released in 2003 after which he retired. He subsequently went into coaching and coached a number of football teams before being appointed to the varsity team at the start of the 2006-2007 competitive season.

Physiotherapist. During the post-injury intervention the injured player (Mark) was advised by a Chartered Physiotherapist who was employed within the sports science department of a British University. Mary (pseudonym) was 31 years of age, specialised in lower limb injuries and had extensive experience of working with and rehabilitating sport-related injuries.

Researcher. I fulfilled the role of researcher. As the researcher I provided a hardiness intervention as a basis for promoting and evaluating change. I am also a former competitive footballer, which increased my familiarity with the conventions of the practice of competitive football (i.e., covert insider to the context; Dandelion, 1995, see Hobbs, 1989). Being a former competitive footballer also helped to lower
some of my initial anxieties about entering the research setting. The intervention was supervised by a Chartered Sport Psychologist (Lynne) who worked in the sports science department of a British University. Meetings took place between Lynne and I throughout the intervention process, which focused on ensuring the effective use of intervention strategies employed, and subsequently during data analysis for the purposes of peer debriefing (Lincoln & Guba, 1985).

Data Collection

A number of methods of data collection were used pre-injury and post-injury to generate a detailed narrative of the participants’ and my perceptions of the intervention. The methods of data collection used pre-injury were questionnaires, participant observation, informal and formal interviews (unstructured), field notes/research log and focus groups. The methods used post-injury comprised participant observation, formal interview (semi-structured), field notes/research log and a diary for the participant to record his injury-related experiences throughout the intervention. A more detailed overview of these methods of data collection follows (for a temporal overview of the methods of data collection used for the pre-injury and post-injury intervention, see Tables 5 and 6, respectively).
Table 4

*Temporal overview of the methods of data collection used for the pre-injury intervention*

<table>
<thead>
<tr>
<th>Method of data collection</th>
<th>Pre-intervention (3 weeks)</th>
<th>Intervention (4 weeks)</th>
<th>Post-intervention (2 weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaires</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant observation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Formal interviews</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>(unstructured)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal interviews</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(unstructured)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field notes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Research log</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Focus groups</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5

*Temporal overview of the methods of data collection used for the post-injury intervention*

<table>
<thead>
<tr>
<th>Method of data collection</th>
<th>Intervention (8 weeks)</th>
<th>Post-intervention (1 week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant observation</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Formal interview</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>(semi-structured)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field notes</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Research log</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Diary</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Questionnaires. Two questionnaires were used during the pre-injury intervention. First, the Dispositional Resilience Scale (DRS; Bartone, Ursano, Wright, & Ingraham, 1989 – see Appendix 2) was used to measure hardiness for the purposes of participant selection (see procedure). The scale consists of 45 statements about life in general that individuals often feel differently about. Participants were asked to indicate the truthfulness of each statement on a 4-point Likert scale anchored by 0 (not at all true) to 3 (completely true). Consistent with the first two studies of this thesis, the composite hardiness score was used which ranges from 0 to 135. A Cronbach’s alpha coefficient of .85 for overall hardiness has been reported (Bartone et al., 1989). Second, the Life Events Survey for Collegiate Athletes (LESCA; Petrie, 1992 – see Appendix 1) was administered in the second week to facilitate the planning phase of the intervention (i.e., one week prior to the onset of the intervention). The scale comprises 69 major life events. Consistent with Kerr and Goss (1996) and Kolt, Hume, Smith, and Williams (2004), the participants were requested to record the perceived impact and desirability at the present time of each event they had encountered in the last 12 months on an 8-point Likert scale. The scale ranges from -4 (extremely negative) to +4 (extremely positive). Consistent with previous intervention studies (e.g., Maddison & Prapavessis, 2005; Perna, Antoni, Baum, Gordon, & Schneiderman, 2003) and the findings that emerged from the first study of this thesis, only the results from negative major life events were considered for the planning phase of the intervention. Petrie (1992) reported 1-week test-retest reliabilities ranging from .76 to .84, and 8-week test-retest reliabilities ranging from .48 to .72. Petrie also provided evidence of predictive, discriminant and convergent validity.
Participant observation. Participant observation was used during the pre-injury and post-injury intervention, which included observing social interactions and events, verbal and nonverbal behaviour, and attending to all the seemingly mundane activities inherent in a particular setting (Taylor & Bogdan, 1998). In relation to the pre-injury intervention, participant observation was conducted pre-intervention, during the intervention and post-intervention. The observations conducted pre-intervention were carried out in a number of settings (i.e., league matches, during formal and informal interviews and at the training venue) to enable me to gain an in-depth knowledge and understanding of the research context generally and the workings of the football club specifically, which in turn facilitated the planning of the intervention. The observations that took place during the intervention were conducted at team workshops and one-to-one consultations, which helped to monitor, reflect on and evaluate the intervention. Finally, participant observation was used post-intervention at league matches and the training venue for evaluative purposes. Participant observation undertaken during and after the post-injury intervention also took place in a number of settings (e.g., one-to-one consultations, team workshops, league matches and the training venue), and helped to initiate a number of the phases in the action research cycle (i.e., planning, monitoring, reflection and evaluation).

Formal and informal interviews. Informal and formal unstructured interviews were used pre-injury to learn how the participants perceived and made sense of, or attached meaning to, situations (Patton, 2002). The informal interviews, or “casual conversations” as they have been described (Krane & Braid, 2005, p. 97), were used prior to, during and after the pre-injury intervention to engage in dialogue with the participants, which helped to reinforce various phases of the action research cycle. These interviews were initiated when the opportunity arose, lasted anywhere from 2
to 20 minutes and took place in a number of settings (e.g., cafeteria, locker room and training venue). In contrast, formal unstructured interviews were arranged to follow-up and expand upon the information gleaned from participant observation and informal interviews pre-intervention and during the intervention. These interviews typically took place at a cafeteria near the training venue, lasted between 15 and 30 minutes and involved discussion of several predetermined topics without a list of specific questions. Consistent with recommendations from Strean (1998) on how qualitative inquiry is particularly suited to evaluating interventions, a formal semi-structured interview with an interview guide was conducted after the post-injury intervention for evaluative purposes. The interview guide was used in a flexible way to help foster an open communication about the themes of interest and to allow the participant to lead the interview in a number of complementary directions (Patton, 2002).

Field notes and research log. Field notes in the form of written memos were completed in the field to provide a descriptive account of daily activity (Krane & Baird, 2005). These field notes were completed prior to, during and after the pre-injury intervention, and during and after the post-injury intervention. The field notes contained an outline of what was observed without inferences and typically took the form of no more than a few words to reflect emergent themes, and also verbatim or near-verbatim quotations during formal and informal interviews, team workshops and one-to-one consultations. These field notes were translated into more coherent stories each evening and recorded in a research log, which provided a precise account of the research setting and all interactions. The research log also served as a reflexive journal for me to create an inner dialogue of the research process. This allowed me to communicate my thoughts and feelings of, and reflections on, the
meaning of what I observed, as well as my own actions (Patton, 2002). However, to
distinguish between what was observed and analytic reflective notes, two different
fonts were used. The research log was essential over the course of the pre-injury and
post-injury interventions to help further establish and refine actions during the
various phases of the action research cycle (i.e., planning, monitoring, reflection and
evaluation).

Focus group interviews. Two semi-structured focus groups were used for the
pre-injury intervention. The first focus group was used pre-intervention to promote
self-disclosure among the participants in order to facilitate the planning of an
appropriate intervention, in what Krueger and Casey (2000) refer to as, “needs
assessment” (p. 12-13). During this focus group I introduced themes of interest that
emerged from the preliminary observations and informal interviews in order to
explore the participants’ and my knowledge and understanding of these phenomena.
The second focus group was used post-intervention for the purpose of evaluation, in
what Krueger and Casey (2000) label as, “summative evaluation” (p. 13). During this
focus group the participants’ and coach’s perceptions of the intervention were
explored. All 12 players (and the coach in the second focus group) were involved in
the focus groups. This was considered small enough for each player to have the
opportunity to share insights and yet large enough to provide a diversity of opinions
(Krueger & Casey, 2000). My role during the focus groups was to ask questions,
listen and summarise emerging themes, whilst also creating a permissive, non-
threatening environment to ensure each participant had the opportunity to express
their own perspectives (Stringer, 2007).

Diary. Consistent with previous action research (e.g., Evans, Hardy, et al.,
2000), the injured participant kept a daily diary during the post-injury intervention.
The purpose of the dairy was for the participant to provide a descriptive account of
his thoughts, feelings and behaviours in relation to three main phases: (a) injury
onset, (b) rehabilitation, and (c) return to competitive football. He was also
counted to record his reflections on the effectiveness of his consultations with
me, the extent to which they met his needs and any other information he felt was
relevant to his physical and psychological recovery from injury. Although not
compulsory, the participant was encouraged to bring his dairy to each face-to-face
consultation with me to facilitate the research process. The completed diary was
handed-in at the end of the intervention.

Procedure

Pre-injury intervention. A selection criterion was used purposively to select
participants for the study (Patton, 2002). Specifically, the participants needed to be
representative of the phenomenon of interest (i.e., athletes that were low in
hardiness). With the coach’s (Andy’s) consent, I approached the players in the
varsity football team and they consented to completing the DRS (Bartone et al.,
1989). The mean of the players’ composite hardiness scores was 75.2, which is
consistent with the pre-test score of other hardiness interventions (e.g., Maddi et al.,
1998) and also below the median split identified in the first study of this thesis (i.e.,
78). As a result, I approached Andy to gain access to the football players. The
purpose of the study was outlined to him (i.e., to increase the players’ awareness of
how to improve their practice when coping with negative major life events) and with
his consent, the players were approached and invited to participate in this study. All
agreed and provided written informed consent in line with the researcher’s
University Research Ethics Committee.
Upon entering the sport setting, I undertook 14 days of fieldwork to familiarise himself with the context and everyday practice of the football team. This involved attending training and league games and assisting in daily chores (e.g., setting up training equipment and collecting stray footballs), which enabled me to become familiar with the social norms, common behaviours and customs of the team. It also facilitated the building of rapport and the basis for the development of trusting relationships by allowing the participants to become accustomed to, and comfortable with, me. Indeed, “without developing trusting relationships, participants will not be willing to open their lives to the researcher” (Krane & Baird, 2005, p. 93).

Knowledge and understanding of the team during this time was also strengthened by researching relevant websites and reviewing team programmes. In addition, during this two week period I also maintained a degree of interest about the lived experiences of the players, which involved keeping an open mind for potential areas for improvement in their practice. Data collection over these two weeks involved participant observation, field notes/research log, and formal and informal interviews. Prior to the end of the two weeks, the players participated in a focus group and completed the LESCA (Petrie, 1992). The focus group lasted approximately 70 minutes and field notes taken immediately after and later expanded upon in the research log to record emergent themes. These qualitative and quantitative data helped me to refine the planning of the pre-injury intervention.

A formal interview to discuss a possible intervention framework was then conducted with ‘key informants’ within the team (i.e., coach and team captain) the following week. Key informants are considered respected and knowledgeable individuals with influential positions in the team (Taylor & Bogdan, 1998). It was agreed that a series of four workshops would be implemented to meet the players’
needs, which would begin the following week (i.e., the start of the fourth week). It was also suggested by Andy the coach and Mark the team captain that weekly one-to-one meetings should also be conducted by myself to reinforce workshop content with each player and to address any other specific needs. Indeed, they implied that certain players might be more likely to speak up during these meetings rather than in the team workshops and that they would also provide an opportunity to discuss any personal and sensitive issues that the players may have. Overall, 28 one-to-one meetings were conducted that ranged from 15 to 45 minutes, which were organised at a time and place convenient for the players. These one-to-one meetings were also supplemented with phone calls and text messages to monitor progress and plan for subsequent consultations.

The four weekly workshops and complementary one-to-one meetings were based on the previous findings in this thesis, the pre-intervention qualitative and quantitative data, and relevant research literature (e.g., Maddi & Khoshaba, 2004; Williams & Andersen, 1998). Furthermore, they were monitored, reflected upon and evaluated through a number of methods (i.e., participant observation, field notes/research log, and informal and formal interviews). The aim of the first workshop was to demonstrate the advantages of the hardiness attitudes of commitment, control and challenge, and the disadvantages of withdrawal, powerlessness and threat. This workshop involved working through sporting examples and increasing the players’ awareness of their own practice by recalling and illustrating instances when they demonstrated high and low levels of hardiness attitudes as a team and individually. The aim of the next three workshops was to increase the players’ awareness that they had a choice in how they cope with negative major life events. The workshops involved a number of team and individual
tasks that educated and then took the players through the coping strategies used by hardy athletes, which aim to transform stressful situations into developmental rather than debilitating experiences. Specifically, the tasks involved increasing their awareness of how they could put the stressful situations they identified in the planning phase of the intervention into perspective, increase their understanding of them and, if necessary, transform them by designing plans-of-action, carrying them out and paying attention to the resultant feedback. These workshops ranged from 60 to 90 minutes and took place in a classroom at a University campus prior to training. Prior to and after each workshop I met Lynne to discuss the intervention itself and for the purposes of peer-debriefing. Peer-debriefing served two functions: to test working hypotheses and clear the mind of thoughts and feelings that may cloud good judgement (Lincoln & Guba, 1985). Indeed, Sugden (1995) reported the importance of developing empathy with participants without getting emotionally tied to them. Following the intervention, a number of steps were implemented to evaluate the intervention. The coach’s and players’ perceptions were explored during a focus group, which lasted 58 minutes. It was recorded, transcribed verbatim and sent to all the players’ for the purposes of member checking to confirm the adequacy and accuracy of the information (Lincoln & Guba, 1985). No changes were made to the focus group transcript. In addition, I attended subsequent training sessions and competitive matches for two weeks, where I was able to observe the participants, take field notes and conduct informal interviews for evaluative purposes.

Post-injury intervention. After the first team workshop, the captain of the team (Mark) became injured and was informed of the purpose of the post-injury intervention and the potential benefits for his recovery. He was then invited to participate. Mark agreed and provided written informed consent in line with the
researcher’s University Research Ethics Committee. In addition to attending the team workshops, Mark attended weekly face-to-face meetings that involved negotiating and implementing action, monitoring progress and (after the first week) reflection on and evaluation of previous consultations. The purpose of the meetings was to facilitate his physical and psychological recovery from injury. The meetings took place over eight weeks (i.e., until one week after his return to sport), lasted between 40 to 55 minutes, were held in a cafeteria near the training venue, and were supplemented with daily communication through the use of phone calls, text messages and social networking websites. Consistent with the first and second study of this thesis and drawing on associated empirical research (e.g., Maddi & Khoshaba, 2004; Wiese-Bjornstal et al., 1998), these sessions aimed to regulate Mark’s psychological responses by helping him to re-appraise the significance of his injury, integrate long- and short-term goals (i.e., process and performance) into his rehabilitation programme to facilitate the rate and quality of his recovery, and increase his awareness of the feedback received throughout his rehabilitation to develop or deepen the hardiness attitudes of commitment, control and challenge. Other strategies that emerged to facilitate the intervention and to meet Mark’s needs, included the use of the different functions of social support (i.e., emotional, information, esteem and tangible; Cutrona & Russell, 1990) and rational-emotive therapy (Corey, 2001). On one occasion a meeting took place at a sports medicine clinic and involved a Chartered Physiotherapist. During these meetings Mark also brought with him his diary to facilitate the cyclical process of action research (i.e., planning, implementing, monitoring, reflecting, and evaluating). Observations of Mark’s verbal and nonverbal behaviour during these meetings were recorded through the use of field notes and the research log. Prior to and after each meeting with Mark,
a meeting was organised Lynne to discuss the intervention itself and for the purposes of peer-debriefing (Lincoln & Guba, 1985). The post-injury intervention was evaluated primarily by the use of a formal semi-structured interview, which was conducted at a convenient time for Mark in an office on the University campus. The interview lasted 60 minutes, was recorded and transcribed verbatim, and sent to Mark for the purpose of member checking (Lincoln & Guba, 1978). No changes were made to the interview transcript. I also attended the last competitive league game of the season to observe Mark and to take field notes for evaluative purposes, which also helped to refine the themes that emerged from the interview.

Data Analysis

There were three cyclical stages of data analysis. First, the research log and various transcripts were continually read and re-read to ensure content familiarity. Second, the data were analysed within a deductive and temporal framework (i.e., pre-injury, injury onset, rehabilitation, and return to competitive football) by repeatedly moving between the multiple data sources to extract verbatim or near-verbatim quotations and reflexive citations that represent the participants and my perspectives. Third, the recurring themes generated through this iterative process were then synthesised into a first-person narrative account of the two interventions, which integrated a realist and confessional tale (Sparkes, 2002). Indeed, the narrative report not only aimed to foreground the voices of the participants in terms of the process and outcomes of the intervention by including rich and in-depth quotations (cf. Dale, 1996), but also aimed to incorporate my voice into the text through my reflexive accounts of what happened during the research process (see Fleming, 1995; Dandelion, 1995; Sugden, 1995). Although realist and confessional tales have traditionally existed as two alternative genres (e.g., Sparkes, 1994a, 1994b), Sparkes
(2002) reported that, “the confessional tale is not really an alternative genre, because it exists in a complementary rather than contrasting relation with realist tales” (p. 61). Integrating these two tales into a reciprocal report is also consistent with previous action research studies (e.g., Evans, Hardy, et al., 2000).

Narrative

The following narrative provides a rich and in-depth account of the participants’ and my perceptions of the process of, and outcomes from, the pre-injury and post-injury interventions. The narrative is divided into four sections. The first section, Time Phase I: Pre-Injury, encompasses the pre-injury intervention and is divided into three subsections: (a) Planning, (b) Implementation and monitoring, and (c) Evaluation. The participants’ and my reflections on the research process are illuminated in each subsection. Consistent with Studies 1 and 2 of this thesis and the temporal nature of the recovery process from injury, the post-injury intervention is divided into three sections, Time Phase II: Injury Onset, Time Phase III: Rehabilitation, and Time Phase IV: Return to Competitive Football. The action research phases of planning, implementation, monitoring, reflection and evaluation are illustrated throughout these sections. This narrative account includes detailed verbatim or near-verbatim quotations and reflexive citations to allow the reader the opportunity to interpret the data in a way more meaningful to them (Sparkes, 1998). Unless indicated otherwise in the text, the quotations or reflexive narrative are drawn from the research log. Finally, the findings are also discussed in relation to research and theoretical models.

Time-Phase I: Pre-Injury

Planning. After turning up to observe the first training session with the football team, I soon found myself collecting a stray football that had been kicked
over the fence. “Thanks, Ross” shouted one of the players. “No problem” I replied, annoyed that I could not remember his name. I took my place back on the sideline of the training ground, trying to remind myself of what I was supposed to be observing. It was an unfamiliar feeling stood there on the sideline, “I felt like I was an intruder and craved for something to do, anything at all.” Although I spent much of the training session focusing on my own thoughts (e.g., wondering how I was being perceived by the players), every now and then I would scan around the pitch and watch Andy interacting with the team. “There didn’t seem to be any problems here”, I later concluded. Indeed, my initial impression of the team was that they seemed to be functioning effectively. Driving home that evening after the training session, I found myself becoming increasingly frustrated, “I felt like I had wasted an hour and failed to gather any meaningful data.” However, the following day I found I was able to think more clearly and realised that these players were not going to suddenly open up to me after a one hour training session. Later that day, Lynne also reminded me of the importance of developing the trust of the players and the value in these early stages of just being involved with the team. Indeed, Andersen (2000) reported, “Over eager students, who really, really want to help athletes, initially have a great deal of trouble doing what they believe is nothing. Learning to hang out is a first, and often difficult, lesson to grasp” (p. 4).

Over the following week, I attended another two training sessions and a competitive league game. Many of my initial insecurities about participant observation were still present, but I started to feel more and more confident ‘doing nothing’ so to speak. I also found myself ‘chipping in’ and helping out more (e.g., setting up training equipment), which is consistent with the experience of Sugden (1995) who adopted a participant role in an ethnographic study within a boxing
environment (e.g., helping with equipment, cleaning mouth guards, and sweeping the floor). As a result, I soon found my level of outsidership within specific settings decreasing (see Dandelion, 1995), which enabled me to observe the team more effectively. This is consistent with the findings of Tonn and Harmison (2004) that illustrated Tonn’s initial sport psychology practicum experience. They described how over time Tonn was able to confront her initial anxieties when working with athletes, which allowed her to shift her focus from a self-focus to a focus on others.

From helping out more in training and standing out in the rain I was able to demonstrate my commitment to the team and as a result I developed a rapport with the players through informal conversations. These actions and the resultant informal dialogue between the players and me were essential I soon felt if I was to develop a trusting relationship with them, a number of who were already becoming inquisitive about sport psychology and my involvement. I soon found that with self-disclosure came responsiveness, “the more information I provided, the more information I was able to obtain about them.” Consistent with the experiences of Fleming (1995), although the informal conversations were not consciously planned at first, they could have hardly been more effective to develop rapport. Furthermore, during these informal conversations, besides the good natured banter, talking about football and occasionally involving myself in unprofessional behaviours such as swearing (when it was deemed that the player would not be offended) in order to reduce the social distance between the players and myself, I found that some of the players started to introduce issues they were currently experiencing. Although some researchers would consider this an ethical issue (i.e., it is ‘unethical’ to put respondents in a more cooperative mood in order to dupe them into revealing more of themselves than they would otherwise; see Homan, 1991), my decision to initiate more (or maintain these)
informal conversations to probe the issues the players were experiencing was based ultimately on my desire to help improve their practice. With the benefit of hindsight, however, perhaps this was also based on my desire to gather data at almost any cost in order to contribute to the body of knowledge in this area of study.

The issues the participants expressed to me included conflicts on and off the pitch, mistakes in competition, financial problems, career concerns, an inability to get a job and increased academic workloads. One player suggested, “I feel like I’m in limbo Ross, I’m just not sure what to do after my degree” and another player reported, “I’m trying to finish off my dissertation at the moment, but my girlfriend is just being so demanding.” Although I was surprised at how our informal conversations would turn from everyday ‘small talk’ to them opening up and telling me about personal issues, I gained a great deal of confidence from the fact that they were able to confide in me. A lesson I soon learned was, “Everything may appear calm on the surface, but there may be a lot bubbling underneath.” Despite the fact that I was very eager to demonstrate my competence and felt pressure to offer a quick fix solution to the issues raised by the players, “At the time I did not really know what to suggest and I felt I was becoming overly concerned about making sure I did and said the ‘right thing.’” As a result, I found myself simply providing a willing ear without being judgemental or giving advice, in essence providing listening support (Hardy, Burke, & Crace, 1999). Furthermore, Lynne also suggested to me the importance of gathering as much information as possible in this early stage and to resist trying to ‘fix problems’ until I understood the full context and background.

Although the methods of participant observation and informal interviews allowed me to develop a rapport with the players and helped to unearth some issues,
I felt at the time that I needed, “more information than these methods were able to provide in order to help plan an appropriate intervention.” Therefore, to help understand the full complexity of the issues that the team faced, I spoke to the coach after a training session about the possibility of running a focus group with the players. Andy said, “Yeah, that’s a great idea. Is it okay if I come along?” I replied, without thinking, “Of course, I will contact you tomorrow to let you know where and when.” As I walked away from the meeting I considered, “How would Andy’s presence alter the dynamic of the focus group? Would the players be more likely to talk about their issues if Andy was or wasn’t there?” I later reflected on this issue with Lynne who, rather than providing me with the definitive answer I was hoping for, facilitated my learning by asking me questions about what I thought I should do. I decided that I would speak to Andy the following day and openly discuss this issue with him.

Although I had carefully thought through what I was going to say to Andy, just prior to the meeting, “my nerves started to kick in as I became increasingly concerned that I didn’t want to get off on the wrong foot with him.” Fleming (1995) also reported similar concerns in his ethnographic research project that was concerned with South Asian male youth and sport. He reported being concerned about upsetting or offending his ‘hosts’ at the secondary school where the research project took place. At the start of the meeting, Andy and I exchanged some ‘small talk’, and then Andy was eager to get my initial impressions of the team. After some encouraging initial comments, I began to suggest that there were some issues starting to emerge amongst the team (keeping in mind the confidential nature of my informal conversations with the players). With that Andy had what can be best described as an outburst of all the issues that he was experiencing in and outside the team. His
comments lacked coherence and he was clearly visibly distressed, “with his fists clenched and his face getting increasingly red.” Although I was able to follow some aspects of what he was saying, I felt it was important not to interrupt him for the purposes of clarification or elaboration. Clearly, “I had opened up a can of worms.” He concluded 25 minutes later, “Thanks for that Ross, I feel much better after getting that off my chest.” “No problem, always here if you want to chat” I replied, feeling unconvinced that I had helped in anyway. “Now, what did you want to discuss with me?” he said, leaning forward. My mind went blank for a few seconds before I recalled the purpose of our meeting, “Yes, sorry Andy, I just wanted to get your thoughts about what effect, if any, your presence will have in the focus group?” He sat back and pondered, and then leaned forward and replied, “Now you mention it, it did cross my mind last night after we spoke. Perhaps it would be better if you just discuss any issues the players may have with them first and if I can help at a later date just let me know.” I was relieved by Andy’s response and, “admired his ability to quickly grasp the issue at hand.” We spoke for another 20 minutes and, “I came away feeling that Andy and I were starting to develop a good rapport.”

It was 6.05 pm, five minutes after the focus group was supposed to start, and none of the players had turned up. The initial nerves I was experiencing soon dissipated, and “I sat there wondering what to do and doubted whether I would ever be able to start an intervention, let alone complete it.” I started to pack up my things at 6.15 pm, when to my relief all the players suddenly burst through the door. Although I found it difficult at first to join in with the informal conversations the players were having amongst themselves, I started the focus group five minutes after they had arrived by outlining its aim: to increase their awareness of any possible concerns they may have either as a team or individually and to identify whether they
knew of any potential interventions that could benefit them. Although the discussion
took off slowly, it soon gathered momentum as the players related to one another.
Some of the issues that emerged included, “conflicts within the team”, “poor
performances”, “training in cold weather”, “lack of team finances”, “washing and
picking up kit”, “losing games”, “nagging girlfriends”, “dissertations”, and “poor
quality pitches.” When asked what effect these demands were currently having on
them, they reported they would get, “negative”, “frustrated”, and “worked up.” One
player commented, “It affects our football as well. You’re not totally thinking about
football on the Saturday. You’re thinking about other stuff.” Another player
suggested, “You could see it last Saturday. It was completely obvious. You could tell
that some players’ minds weren’t on the game.” Two other players then reported,
“My mind wasn’t on the game on Saturday. My mind was totally on my dissertation”
and “I’ll be honest, it was the same for me on Saturday. I don’t like to use it as an
excuse, but I was thinking about [my dissertation] during the game. It did affect me
big time. Not focusing properly on the game.” Then my ears really pricked up as
another player suggested:

Yeah, in the week you’re normally thinking about the game on Saturday and
thinking about the opposition and that. But, because you’ve got loads of
work on, you don’t. … And if you haven’t prepared for the game, if your
head’s not in the game, you’re not fully committed to tackles or anything like
that and that could result in injury.

Not only could I directly relate to what they were saying, but their remarks were
consistent with Williams and Andersen’s (1998) model of the prediction of sport
injury. Indeed, the model suggests that one of the main mechanisms leading to sport
injury is attentional focus; a suggestion which has been supported by recent research
(Rogers & Landers, 2005). One participant also reported, “Personally myself, when I get stressed and I play, I get a bit angry and a bit aggressive and I fly into tackles that I shouldn’t even really put myself in. I just want to hurt someone.” Although Andersen and Williams’s (1998) model addresses cognitive and physiological mechanisms leading to injury, it might be that behavioural factors also play a role in the prediction of injury occurrence.

After some discussion, I then asked, “How have you been dealing with this ‘stress’?” One player replied, “I think the boys have been having a few drinks on a Friday. Because it’s the only time they think, ‘tomorrow I haven’t got to do this dissertation.’” Another player responded, “I’ll hold my hands up for Saturday. I went out Friday. It’s not good enough. It didn’t help that I came in 15 minutes late turning up. And you all could tell I had been out.” Clearly, some of the players had resorted to avoidance coping strategies (i.e., mental disengagement), which they all openly acknowledged was poor practice. I said, “Okay, so what strategies do you think we could put in place to help?” A glazed look came across their faces, but rather than step in and offer some possible strategies, I let my question linger a little longer. One player then suggested, “I guess, we need some way of dealing with the issues. Get right to the heart of them.” After the other players nodded in agreement, I outlined the hardy attitudes and coping strategies identified in this thesis, and “the team appeared enthusiastic at the prospect of increasing their awareness of these strategies to help improve their practice.” I also raised the prospect of having Andy attending the sessions, which they responded to with a resounding “Yes.” It appeared that, “the players and coach had a great relationship.” At the end of the focus group I asked the participants to complete the LESCA to get an insight into the negative major life events that each athlete may be experiencing. The negative major life events reported
substantiated some of the issues that the players had identified, but also highlighted a number of other individual issues that had not emerged from the qualitative data. These included death of close friend and family member, breaking up with girlfriend, failing an important exam, not attaining personal goals in sport, major errors/mistakes in actual competition, loss of confidence due to injury, unable to find a job, making career decisions, divorce or separation of parents, and continual poor performance of the team. Overall, I was pleased with the process and outcome of the focus group, but “I was worried that I had unconsciously pushed them into increasing their awareness of the hardy attitudes and coping strategies, rather than spending more time exploring other potential strategies.” I decided that I would discuss this concern with key informants the following week.

Based on the findings from the first two studies of this thesis, relevant literature (e.g., Maddi & Khoshaba, 2004; Williams & Andersen, 1998) and the information derived from the players, I put together an outline of a potential intervention and organised a meeting to discuss it with Andy the coach, and Mark the team captain who had been present at the focus group. Before the meeting started, however, I asked for Mark’s reflections on the focus group. He suggested, “Yeah, I thought it was good at getting to the source of our problems” and “All the lads are really up for working through the strategies you were talking about. To be honest, anything that can help with the stress we are under will be helpful.” This put my mind at ease, as rather than me imposing an intervention on the players, they appeared to feel they could really benefit from increasing their awareness of the strategies. After discussing the proposed intervention with the coach and team captain, however, the coach emphasised, “I would try and make it simpler and as fun as possible Ross. Some of the players aren’t the brightest and the ones that are won’t
show it in front of the other players.” Mark added, “I think it would be good if you had the time to do individual meetings as well.” After discussing with Andy and Mark ways to make the intervention more effective (e.g., use of video clips and making it as interactive as possible), it was decided that a series of four team workshops, followed up with one-to-one meetings would take place over the next four weeks.

**Implementation and monitoring.** The first team workshop was just about to start, and consistent with Tonn and Harmison (2004) who described Tonn’s first experience of talking in front of a group of athletes, I was nervous and concerned about the athletes’ evaluating the quality of the session. Furthermore, I empathised with Tonn who reported, “There were times when I was fully prepared to conduct these activities, yet I would irrationally convince myself that I was not ready” (Tonn & Harmison, 2004, p. 332). Indeed, I found myself continually making unnecessary changes to the workshop, up until an hour prior to the session. As the session progressed, however, I started to relax and became more comfortable in front of the group. The aim of the first session was to demonstrate the advantages of the hardy attitudes of commitment, control and challenge, and the disadvantages of withdrawal, powerlessness and threat. I started the session by providing sporting examples that the players would be able to relate to (i.e., video clips and quotations from sporting autobiographies), which demonstrated how the hardy attitudes are necessary to overcome stressful circumstances. The players were then encouraged to reflect amongst themselves on athletes (e.g., Lance Armstrong) and teams (e.g., Liverpool Football Club) who they thought demonstrated hardy attitudes during times of adversity. To deepen their knowledge of the hardiness attitudes further, the players
were then asked to provide examples of when they demonstrated high and low levels of the hardiness attitudes as a team. The team reported:

We were two-nil down at half-time. It was a cold day, the pitch we were playing on was rubbish and it was raining. But rather than get down on ourselves we kept playing our football by maintaining possession [i.e., commitment] and also working hard and changing our formation at half-time to change the game around [i.e., control]. We came back to draw 2-2 and we soon learned how to come back from situations like that [i.e., challenge]. It showed we need to stay calm, work hard, and have faith in our abilities.

We lost 4-0 to a team we should have beaten. We just lost our heads and forgot how to play as a team. Our heads went down after half time and we stopped playing our football [i.e., withdrawal rather than commitment] and felt we couldn’t have influenced the result [i.e., powerlessness rather than control]. We just became sloppy, conceding two penalties and a red card. We took no positives out of that game [i.e., threat rather than challenge].

After this group task, “although the athletes appeared to enjoy the session, it was clear to see that the players were starting to get restless.” As a result, I decided to end the session after 60 minutes, but encouraged the players to arrange a time to meet with me if they wanted to during the week. In order to maintain their trust, I emphasised to the players that the sessions were confidential and that they would not influence team selection. At the end of the session, I also provided the players with a booklet that encouraged them to reflect on a time when they individually demonstrated high and low levels of hardiness attitudes prior to their meeting. A meeting was organised with each athlete and they each completed their individual task. These one-to-one meetings allowed me to “develop a greater rapport with the
players and also gain a greater insight into how they each of them dealt with stressful situations.”

Prior to the next group session, I organised a meeting with Andy to ask him if he would like to be involved in subsequent sessions. Although he agreed and was happy to be involved, he looked as though something was on his mind. I asked, “Is everything okay, Andy?” “No, I’m having a bad day. I feel like I’m fighting a losing battle here” he replied. We spoke at length about an issue he was having with a stakeholder in the football team, and “I started to feel out of my depth. I tried to relate the conflict he described to theories and models I had developed a good understanding of, but every time I did I wasn’t paying attention to what he was saying.” Another lesson I soon learned was, “Real life issues are messy and don’t fit into neat boxes like the theories I had come to know during my studies.” After outlining the entire story, Andy was clearly expecting a response, but I did not know what to suggest. I eventually said, “Is it okay if I think about the matter some more before offering some advice?” Andy and I decided that we would meet up prior to the next group session, once we had both had a chance to reflect on the situation. However, soon after the meeting, I found that I was not able to recall a great deal of information about the conflict, because I had not paid enough attention to what Andy was saying during our meeting. Furthermore, I was also aware that this was going beyond the aim of the intervention, which was to improve the practice of the players. Clearly, interventions do not occur in isolation of the individuals and situations factors surrounding them (see Sugden, 1995).

I spoke to Lynne the following day about the predicament I found myself in. She reminded me of the dynamic nature of action research and encouraged me to meet with Andy to discuss his issue further. However, despite going away and
consulting the relevant literature on conflict resolution (e.g., Maddi & Khoshaba, 2004), it was two hours prior to my meeting with Andy and I was still unsure about how to approach his dilemma. I was in two-minds whether, “to cancel the session in order to not ‘lose face’ or to throw myself into the situation and learn by doing.” Consistent with Tonn’s sport psychology practicum experience where she reported forcing herself into situations that were uncomfortable (Tonn & Harmison, 2004), I decided to meet up with Andy and simply explained to him that I had not fully understood the conflict. He recounted the situation, and I just listened to him tell his story rather than worrying about trying to relate it to theory and using all the correct micro-skills (e.g., head nodding, mirroring and eye contact). After further reflecting on his conflict with the stakeholder and discussing how they both contributed to it, we then devised a plan-of-action. This involved resolving the conflict by writing down the specifics of what Andy wanted to communicate to the stakeholder. In light of Andy’s negative feelings towards the stakeholder and his experience of previous meetings with him, I also suggested simulating the meeting with Andy, with me playing the role of stakeholder. After this, Andy reported, “Thanks so much for meeting up today Ross. I feel much better now about how to handle the situation.”

Over the next three weeks, the players and coach attended three more group workshops, which involved increasing their awareness of the coping strategies used by hardy athletes. The aim of these sessions was to increase their awareness so that they have a choice in how they deal with stressful circumstances. Within these group sessions and follow-up meetings we worked through a three step procedure: (a) acknowledging stressful circumstances they wanted to work through as a team and individually; (b) thinking through these stressful circumstances in a way that broadened their perspective and deepened their understanding of them (e.g., Who is
involved? What aspects of the situation can and can’t you control? How could you resolve it?); and (c) changing the situation for the better by making an action plan, carrying it out and paying attention to the feedback they obtained (e.g., What is the goal of the action plan? What steps will lead you to your goal?). However, prior to working through these steps, a number of examples were provided to increase their understanding of the strategies involved. One negative major life event that was reported in the group sessions that was currently having an impact on each player was the continual poor performance of the team. One athlete reported, “At the moment, a few things seem to keep going wrong in the first half, which causes us to go down this negative spiral where we lose our focus and start taking it out on each other. … In the second half we’re just going through the motions.” It was unanimously agreed by the players and the coach that they wanted to increase their awareness of the hardiness coping strategies by applying them to this negative major life event.

After working through a number of tasks, the players were able to increase their awareness of how to broaden their perspective or re-appraise the significance of their series of poor performances. However, putting things into perspective was not easy to apply in practice, “It really took time for the participants to identify a perspective that worked for them.” For example, one player in particular found it difficult to put things into a positive perspective, “I am the first to pull a positive out of anything, but there is nothing positive to say about this situation. I mean it’s all very well sitting round and pulling positives out, but we’re not kids anymore.” Eventually after working through a number of perspectives, the coach and players were able to find a perspective that worked for them (i.e., commonplace perspective). For example, the coach commented, “You get slumps like this at every club in the
country. We aren’t the only club currently going through a slump.” After working through this strategy, “It was clear from observing the session that the participants appeared less frustrated and were better able to get a bird’s eye view of the situation, which seemed to help them think more clearly about how to turn this situation around.” The players and coach then aimed to increase their understanding of the situation by taking account of the ways in which they each contributed to its stressfulness. Although it appeared from my perspective that the team could understood what they were doing wrong (e.g., shouting at one another and not running back after set pieces), they were very outcome focused (i.e., winning matches). Indeed, “they seemed to lack a thorough understanding of ‘how’ the team produces its best performances, and what they should be thinking about and focusing on during the game if they are going to give themselves the best chance of winning.” It was unanimously agreed that we would work through an action plan that focused on developing a clear picture of the strengths of the team that they were looking to exploit, which would form a number of team process goals and help act as key reminders for what the team should be focusing on within the game (cf. Bull & Shambrook, 2005). Consistent with the hardiness attitudes, process goals are renowned for being within the players’ control, therefore, it was thought if they believed they could influence their performances they would more likely stay involved and committed during league games and also increase the likelihood that they would learn from their experiences (Maddi & Khoshaba, 2004). Once the team process goals were finalised and agreed by all the players, they identified five key words (i.e., positive, harmony, tempo, commitment and mental strength) as triggers which were put on posters in the changing rooms. The players were clearly pleased with the posters on the changing room wall, which served to reinforce a process
focus. This process focus was also incorporated into the pre-match team-talk. Indeed, Bull and Shambrook (2005) reported that, “Any good pre-match team-talk is full of these process goals. By going through the goals in advance of the pre-match talk, you make sure everyone fully understands what these goals mean for them, why they are important, and how they will allow the team to be successful” (p. 27). The importance of the resultant feedback from their efforts in order to develop the hardiness attitudes of commitment, control and challenge was also reinforced to the players.

Over the final three weeks the players were provided with a booklet to bring to their one-to-one meetings which outlined and provided tasks on the hardiness coping strategies. However, only four players met with me every week, with the remaining eight players only meeting me once or twice over the three week period. At first, I was really frustrated with the eight players who did not attend the follow-up meetings. I reflected in the research log, “I was annoyed because I had taken time out of my schedule to plan the sessions, and they hadn’t brought with them the same level of commitment as I had.” When I expressed my frustrations to Lynne, she reminded me that all the players were still attending the group sessions and that I should not take it personally that not everyone ‘buys’ into support in the same way and to the same extent. She also emphasised that it was important to direct my focus on the players that were meeting with me. After the meeting I reflected, “I felt much better after speaking with Lynne. She really helped me to see the glass half full rather than half empty.” During the meetings that did take place, I worked through the hardiness coping strategies with each player by focusing on one specific issue that they deemed pertinent to them. Although the aim of these meetings was to reinforce the team sessions by helping them to further increase their awareness of the hardiness
coping strategies, I also provided emotional support (e.g., listening and emotional challenge), which indirectly helped the participants to broaden their perspectives (Rosenfeld, Richman, & Hardy, 1989). I also found that during these meetings that rather than just increase the players’ awareness I wanted to help actually resolve their issues by doing everything for them. However, with time and as a result of my meetings with Lynne, I quickly learned the importance of empowerment. All six perspectives from the second study of this thesis were worked through with the players (e.g., commonplace, manageability, personal, global, time and positive). For example, one athlete in terms of breaking with his girlfriend was able to use a manageability perspective, “I guess things could always be worse. It’s not like she’s all I had going on in my life”, whereas another athlete in relation to making career decisions used a commonplace perspective, “In our last session you helped me to realise that I wasn’t the only student going through this.” After the athletes had increased their awareness of how to put their issues into perspective, they then worked through how to increase their understanding of them and, if necessary, how to formulate action plans to resolve them (e.g., need to update curriculum vitae and organise a meeting with a University tutor or career advisor). Overall, although I was pleased with how the meetings unfolded, at times I did feel I was not doing enough. But, I soon realised that, “Sometimes I don’t think there was anything I could do or say, it was just a matter of me being there for them and providing a willing ear.”

**Evaluation.** At the end of the intervention the players’ and coach’s perceptions of the intervention were reviewed (i.e., whether the team and individual sessions achieved their aims). Although the initial focus group was to facilitate the planning of an intervention, the participants reported that it was really effective in terms of getting the team talking, something they rarely did. One player suggested, “I
think it [focus group] was good because we were talking about the same problems. It wasn’t like it was just me coming out with loads of problems. There were reoccurring themes. It’s wasn’t just me, it was everyone” (focus group extract). Other players reported, “It was good that we were talking together … and were able to chat about things. Even though it wasn’t entirely football related”, “It was good to get stuff off your chest that you were thinking about. It got everything out”, and “Talking about your feelings and stuff and letting it out rather than holding it in is only going to benefit us as a team” (focus group extracts). As a result of this discussion, Andy suggested, “I’d be happy to drop a training session next season to get everybody in talking like this. I mean, this is like a training session for us” (focus group extract). Subsequently, the coach and players decided that in the following season, rather than drop a training session they would schedule in a 30 minute session prior to training to discuss matters arising amongst the team. For example, one player reported, “If we had a game on the Saturday, you will have it in your head what happened, where things went wrong … and what things went well … You have Sunday to think about it. On Monday we can come in sort it out before training. Get all the issues out” (focus group extract). Andy also suggested, “I hope me being here over the past few weeks, demonstrates that I am open to speak to people about issues that they might have whether it be football or other issues” (focus group extract), which was received well by the players.

In relation to the intervention, the first session aimed to increase the players’ awareness of the advantages of the hardy attitudes of commitment, control and challenge, and the disadvantages of withdrawal, powerlessness and threat. The players reported that this group session and follow-up meetings achieved their aim by providing them with a greater insight into their current practice. In terms of the
group session, one player reported, “I thought it was good because we had two different situations and we could get a comparison. So, if we were in the same situation again, then we would know which route to follow” (focus group extract). With regard to the individual task, one player suggested, “It really allowed me to think critically about myself. I always thought I was quite a tough character, but I think I can improve in each attitude [i.e., commitment, control and challenge].” The aim of the subsequent group sessions and follow-up one-to-one meetings that addressed the progressive hardiness coping strategies was to increase the players’ awareness of the choice they have in dealing with negative major life events. Indeed, the players suggested that the intervention was not only effective in increasing their awareness of good practice (e.g., hardiness coping strategies), but also increased their awareness of their current inability to cope effectively with stressful situations. The players recommended, however, that these sessions could have been more effective if I had worked with the players throughout the resolution of their negative major life events. Although I encouraged the players to deploy the hardiness attitudes and coping strategies they had learned, they felt it would have been more effective if I had worked with them to transform the stressful situations into developmental rather than debilitating experiences. Although feeling at the time that the players had become somewhat dependent on me, Andy commented:

We have highlighted loads of issues, which are still issues. We haven’t put them to bed yet. They are still issues. … In the longer term, maybe they will be addressed. But that’s not to say it [intervention] hasn’t worked. It’s highlighted and flagged up issues that we need to and can look to address over time… We have also discussed ways to resolve those situations… But as a group for the first time we’re at a stage where perhaps as players you’re
all on the same side, and thinking you’ve got to do something here as opposed to making excuses. … You’ve actually looked at yourselves. And it’s not easy, and it hasn’t been easy. But, progress I think has been made. We’re moving in the right direction (focus group extract).

After the focus group had concluded and the players had left, Andy informed me that following our discussion he had met with the stakeholder he had had a conflict with and, “though we are still along way from where we both want to take [this football club], it was the most productive meeting I’ve had with [the stakeholder]. I finally feel we’re singing off the same hymn sheet.” I was really pleased for Andy, and reinforced this to him.

Taken together, although the intervention achieved its aim of increasing the players’ awareness of how to improve their practice when coping with stressful circumstances, it was evident that considering the diverse and voluminous negative major life events experienced by the players that actually changing practice required more time and support (cf. Gilbourne & Richardson, 2005). Indeed, Maddi et al. (2002) reported actually bringing what is learned from a hardiness training programme into fruition can take a long time. Therefore, to actually improve the players’ practice and ultimately increase their resilience to injury from a psychosocial perspective, the players felt that the intervention would have had to have been conducted over the entire competitive season. Indeed, this insight may help to explain why no pre-injury interventions have yet significantly lowered the impact of negative major life events (e.g., Kerr & Goss, 1996; Kolt et al., 2004; Perna et al., 2003).

Over the following two weeks, I followed up the intervention by attending two more training sessions and league games. During one league game in particular,
the players were the most positive I had seen them; “they were relaxed, focused, and positive to one another.” As I sat there on the sideline wondering whether the intervention had contributed to this perceived improvement in practice, I decided to speak to a few of the players. When I asked what they felt caused this positive change in practice I was advised: (a) “Since we’ve had these sessions, I feel I can speak to people about how I feel and they can talk to me as well” and (b) “Yeah, we are all really happy at the moment as we all handed in our dissertations last week.” Clearly, not only do hardiness training programmes help increase the channels of communication amongst players, but other personal factors (e.g., handing in dissertations) can moderate the impact of an intervention.

**Time Phase II: Injury Onset**

During the only league game throughout the course of the intervention that I was unable to attend, Mark the team captain tore his hamstring. However, it was only midway through a team workshop, two days later that I realised. We spoke briefly during the session about how his injury occurred and I also thanked him for managing to attend the group session, but rather than ask what effect the injury was having on him in front of the other players, we spoke after the session and decided that we would meet up two days later.

It was four days after Mark’s injury occurred, and I was about to meet with Mark in a cafeteria for the first time. I saw Mark approaching from the distance on crutches, and I was shocked as he appeared surprisingly upbeat. At first, we spoke at length about his injury and how it occurred:

Before the game, my hamstring was really tight. I said to [Andy], “do I have to play?” [Andy] said, “I’d like it if you played. If we start winning, then I’ll take you off. … So I warmed up really well and then at the beginning of the
game it wasn’t tight anymore. … It was about 10 minutes into the game. The ball bounced over the top, and I lunged to clear it away from someone and just felt a really tight pain in my hamstring, and then just felt a sort of pop. Then it was agony. … I came off the pitch and one of the boys drove me to the doctors. When I saw the doctor, he said I had torn it because it had swelled up straight away and I had a big dark bruise (interview extract).

I asked Mark how the injury was affecting him, “No big deal. I’ve been through this before; I know the process and the expected timescale” he replied. Mark told me that he had successfully rehabilitated from the same hamstring injury a number of years ago and as a result he knew what the rehabilitation involved and what to expect. His response was consistent with Wiese-Bjornstal et al.’s (1998) integrated model of responses to sport injury, which suggests that personal and situational factors affect how athletes appraise their injury which in turn influences cognitions, emotions and behaviours. As a result of Mark’s positive previous injury experience (i.e., personal factor), it appeared he appraised that he had a sufficient understanding of how to cope with his injury and as a result did not report or appear to exhibit any signs of strain. With this in mind, “I experienced mixed emotions, I was happy that Mark wasn’t distressed, but felt I had been cheated. I had been waiting for an injury player to be part of my intervention, and once I found someone I felt as though he didn’t need my help.” I was in two minds whether to ask Mark to participate, “On the one hand, it would help me with my research, but on the other I was concerned whether Mark would stay committed to the project as I felt that perhaps only I could benefit from the process.” Indeed, Gilbourne (1999) recommended that participants should not be, “coerced to engage in ‘change strategies’ for which they have little or no enthusiasm” (p. 252). Perhaps for somewhat selfish reasons, I found myself starting
to outline the post-injury study to Mark and its purpose (i.e., to help improve his practice by introducing a hardiness intervention to help facilitate his physical and psychological recovery from injury). Mark agreed to participate and we planned to meet at the same time and place the following week.

It was one week later and I was still concerned about Mark’s involvement in the study. I had spoken to Lynne who had worked with a large number of athletes rehabilitating from injury and she suggested I just monitor the situation. As Mark and I sat down for our next meeting, once again he seemed fine and appeared positive and upbeat. However, “as the consultation went on, it was clear that things were not okay. Mark’s body language got increasingly worse. Rather than sitting up right and engaging in conversation, he began to slump back in his chair and started to avoid eye contact.” After 10 minutes of ‘small talk’, he began to open up about how he was feeling, which included feeling gutted, annoyed, frustrated, isolated and demotivated. He also suggested, “I can’t really sleep very well at night. I end up falling asleep for an hour, and then I’d wake up and have way too much energy for that time of day.”

Shocked by the sudden change in Mark’s mindset, we went on to discuss the underlying reasons. He felt that living with team-mates, being sat at home alone while his house-mates were out socialising, playing well prior to his injury and the fact that the injury occurred in an unimportant game were all contributing factors. The most significant factors, however, according to Mark were the timing of the injury and a minor setback in his rehabilitation. He reported during his interview:

> When it first happened I thought it was really bad, but then after because I had been on crutches and hadn’t put any pressure on it, it felt loads better.

> But as soon as I came off the crutches and starting walking on it, it got
worse because of the pressure of being on it … I thought I was going to be completely out until the end of the season (interview extract).

Reflecting on the change from a positive to a negative mindset, he said, “Last week when we met I was really confident I would get back before the end of the season, but, now, I just don’t know anymore.” It appeared to me that Mark’s evaluation of the setback in his recovery led him to consider the implications of what was at stake (i.e., primary appraisal) and by doing so he thought he would be unable to return to competitive football before the end of the season, which gave rise to the aforementioned negative emotions. Indeed, Daly, Brewer, Van Raalte, Petitpas, and Sklar (1995) found that athletes’ cognitive appraisals were significantly correlated with their total mood disturbance. Mark also reported in his diary, “Why did I have to get injured now?! It couldn’t have happened at a worse time … Right at the end of the season.” After providing emotional support to Mark by listening to and empathising with him, I tried to help him view things more positively by putting his injury into perspective. This approach was consistent with the coping strategies used by the hardy athletes in this thesis and empirical research (Maddi, 1987; Maddi et al., 1998; 2002, Maddi & Khoshaba, 2004). I said to Mark, “Can you think of another way of looking at your injury to make it seem less stressful?” Mark appeared puzzled by this question, but after unsuccessfully working though a number of different perspectives (i.e., commonplace and manageability) that have also been identified in associated research (e.g., Bianco, Malo & Orlick, 1999; Rose & Jevne, 1993), he eventually suggested, “I guess, you could say it has also come at a good time. I mean, I’ve got my dissertation to do at the moment, and I really need as much time as I can to get the best grade I can.” This positive perspective was consistent with Tracey (2003) who found that several of the injured athletes she interviewed, “began
to rationalise their injury as possibly ‘good timing’” for academic reasons” (p. 284).

Gould, Udry, Bridges, and Beck (1997b) also reported that some of the injured athletes they interviewed, “reframed their injury from a negative to a positive by viewing their injury as necessary ‘time off from skiing’” (p. 387). Despite being able to put his injury into a positive perspective, it was clear to me from Mark’s tone of voice (i.e., a note of uncertainty) that this strategy had not had the desired effect. I was also aware that Udry, Gould, Bridges, and Beck (1997) reported, “Well meaning individuals may increase the distress of recently injured athletes by suggesting the myriad of benefits associated with injuries” (p. 246). Mark reflected upon this incident during his interview at the end of the intervention:

Looking back now, in the long run it definitely did help … When I first thought it and said it, it was probably a passing joke – ‘plenty of time to do my dissertation!’ But, at the time [injury onset] I wasn’t thinking about my dissertation at all. But then as soon as I was okay, just walking, getting around and when I was going to lectures and meeting up with my dissertation tutor, I did see it as being good timing.

This quotation reinforced to me that Mark was eventually able to re-appraise his injury in a positive perspective, which he reported helped to lower the intensity and frequency of the negative emotions he was experiencing. However, at the time this was not sufficient as a strategy in itself, and I was at a loss of what to do next, “I sat there feeling powerless.” I decided to summarise what Mark had told me and elaborated and sought clarification on a number of issues surrounding his injury to help identify another strategy that would help Mark to lower his negative cognitions. Fortunately, it soon dawned on me that Mark’s cognitions were incongruent with what the doctor had advised him. There was 10 weeks left of the season and the
doctor informed him that it would take eight weeks to recover, leaving two weeks left to play. From my perspective, Mark was either not thinking rationally or in light of the recent setback he did not believe the doctor’s prognosis. I decided to raise this with him and if necessary challenge his irrational thoughts (i.e., rational emotive therapy; Corey, 2001). “Mark, I don’t want to build your hopes up, but considering what your doctor told you, isn’t there still a chance that you could return back for the last few games of the season?” Mark raised his head and sat up in his chair, “Do you really think so?” he said. We briefly discussed why, how this might be possible and I also provided him with esteem support by suggesting, “If you try and tick as many boxes over the forthcoming weeks as possible, it will give you the best possible chance.” Mark later recorded in this diary, “Had a really good meeting with Ross today. It was good to chat to someone who was interested in what I had to say … Feeling much better about my chances of playing again this season.”

In our next meeting, Mark was far more optimistic about his chances of playing before the end of the season. However, he was still frustrated as being incapacitated and with the difficulties he was having at home, “Just doing normal stuff. Getting upstairs and silly stuff as well; even sitting on the toilet!” This was in line with the frustrations reported by injured athletes in associated research (e.g., Carson & Polman, 2008; Johnston & Carroll, 1998a; Tracey, 2003). From the second study of this thesis and the related research literature, I was aware of the importance of receiving practical support from friends and family to help cope with being incapacitated. Because Mark’s family did not live nearby and were unable to offer any tangible support, we spent the majority of the consultation increasing his awareness of the support network of friends available to him. Mark soon realised that he had a large support network of friends living close by that he could draw on. He
reported, “Met with Ross. He really helps me to see things much clearer. Little
things, like which mates I can ask for help and that” (diary extract). He also reported
in his diary, “My housemates cheered me up today. They weren’t – ‘are you alright’
and that. They were taking the piss out of me and stuff as per usual!!” Clearly,
Mark’s housemates were not only able to provide practical support, but also provided
him with a much needed sense of normality.

*Time Phase III: Rehabilitation*

Although in the previous phase Mark spent the whole time icing and resting
his injured leg as recommended by the doctor, at the start of this phase the doctor had
scheduled an appointment for Mark to meet with a physiotherapist from a general
practice hospital to plan his rehabilitation programme. However, Mark was frustrated
with the lack of time and ineffective communication offered by the physiotherapist,
which have been reported to negatively influence injured athletes’ psychological and
physical recovery (Tracey, 2008). At our meeting he explained:

> When I went into the hospital to see the physio, he didn’t really tell me much.

> … He remained sat down, had a quick look …and didn’t really want to be

> involved in dialogue. He just wanted to get the next person in. My

> appointment was at 9 o’clock and I was literally out by 9.20. He didn’t say

> anything really towards what I should do.

Surprisingly, Mark did not seem overly worried, which I found rather
confusing considering his urgency to return to football before the end of the season. I
was also really concerned that Mark had not been given a rehabilitation programme
to follow. Mark seemed less concerned than I was about this because he still had the
rehabilitation programme he used three years ago when he sustained the same injury
and was confident that he knew how to rehabilitate it. Although this helped to reduce
my concern, I did encourage him to make another appointment with the physiotherapist to clarify exactly what he should be doing, but Mark had clearly lost confidence in the physiotherapist and did not want to make another appointment. As a result, I suggested the possibility of making an appointment with a physiotherapist who specialises in sport injuries and may be better equipped to meet his specific needs by providing important sources of informational and emotional support (cf. Bianco, 2001). Mark felt this was not necessary and not wanting to undermine his confidence, I reluctantly accepted his decision. Indeed, Gilbourne et al. (1996) reported that injured athletes’ level of adherence can be affected from spending protracted periods away from the clinical environment, which, according to Wiese-Bjornstal et al.’s (1998) integrated model, could impact negatively on their physical and psychological recovery from injury. However, I was able to draw encouragement from Evans, Hardy, et al.’s (2000) findings, which reported that one injured athlete in their study who decided not to pursue physiotherapy was able to maintain his adherence because he had previously experienced a number of similar injuries and was able to draw from those experiences.

Over the following two weeks, Mark adhered to his own rehabilitation programme, which was broken down into daily and weekly progressive exercises that aimed to develop strength and flexibility in the hamstrings and the surrounding muscles. Periods of rest and recovery were also scheduled throughout. In line with previous research, Mark and I also introduced long- and short-term goals (Carson & Polman, 2008; Evans, Hardy, et al., 2000; Evans & Hardy, 2002a). Specifically, one long-term goal was set (i.e., to return to normality), whereas a number of short-term goals were set, monitored, reflected upon and adjusted if Mark experienced pain, tightness or soreness. For example, during the exercises Mark reported, “It wasn’t an
agonising, splitting pain, it was more of a dull throb, and that’s when I knew I needed to ease off the exercises.” Although Mark did not experience any setbacks over these two weeks, he adopted a flexible approach to his short-term goals during this time, which was an approach also used by Evans, Hardy, et al. (2000). These authors emphasised, especially in the early phases of rehabilitation that are often characterised with minor setbacks (e.g., swelling and soreness of the injury), the importance of setting goals that adhere to the principles of effective goal setting (i.e., specific, measurable and realistic; Weinberg, 1992), but at the same time incorporate sufficient flexibility to avoid the demotivating effect of not achieving them. Indeed, Gilbourne and Taylor (1998) reported that an injury-related setback can be further exacerbated if rehabilitation goals are not achieved. As a result, we employed short-term goals that focused on the processes of the specific movements involved in his rehabilitation exercises. These process goals helped to focus Mark’s attention, for example, on walking form and technique (e.g., stride pattern) and range of motion and control in stretching exercises over the initial two weeks. The effectiveness of this approach was highlighted by Mark in his diary, “Ross has got me focusing more on movements [in the exercises] than the amount I was doing. I’m finding this really helpful as it’s making sure I’m doing them correctly” and during his interview, “Focusing on the movements involved [in the exercises] helped me become more aware of how my body was reacting rather than counting reps in my head.”

During this time I reinforced the technical aspects of the exercises and encouraged Mark to monitor the effects of his own actions by personally reflecting on his diary entries (e.g., less pain, more strength, greater flexibility and increased range of movement). I also provided him with feedback from my observations (e.g., signs of progress, improvements in his demeanour and adherence to his rehabilitation
programme and goals). Indeed, “Every time I noticed a positive change in Mark or came across an improvement in his diary, I made sure I reinforced this by bringing it to his attention.” Consistent with the second study of this thesis and previous research (e.g., Maddi, 1987; Maddi et al., 1998, 2002; Maddi & Khoshaba, 2004), this feedback helped Mark to start to develop or deepen the hardiness attitudes of commitment, control and challenge. That is, Mark increasingly felt that his actions were positively influencing his recovery (i.e., control attitude) and as a result he maintained a high level of adherence to his rehabilitation programme (i.e., commitment attitude). However, considering that Mark had experienced the same injury before, rather than developing the challenge attitude through self-discovery and learning from his injury experience, he reported that the feedback he received helped deepen this attitude by reinforcing the lessons he had learned from his previous injury experience. For example, “From previous experience, I had done it before, I knew not to think just because the pains not as much as it was, not to go straight into running because I was only doing a bit of stretching and it wasn’t used to me running on it and stuff” (interview extract). Taken together, as a result of using process goals and paying attention to the resultant feedback, Mark felt that he was facilitating his physical recovery and was becoming increasingly confident in his injury, a finding that is consistent with the second study of this thesis. For example, “When the pain was lesser … and not having to restrict my stride when walking … that indicated that it was getting stronger and I had more confidence in my injury” (interview extract).

During the next four weeks of his rehabilitation, Mark experienced a number of concerns over his rehabilitation. In particular, Mark started to doubt his rehabilitation programme, especially as the pressure of returning to sport prior to the
end of the season was increasing. For example, Mark reported, “I was more worried. I think because I hadn’t had much help when I was at the hospital and I really wanted to play again before I left, I was worried whether I was doing the right stuff” (interview extract). Mark’s ability to interpret feedback from his injury also decreased and as a result he felt less in control of his recovery and became less committed to his rehabilitation programme (i.e., non-adherence). Although I continued to provide Mark with feedback from my observations and tried to reassure him of the progress he had made and was continuing to make, it soon became clear that this was insufficient to eradicate his concerns. I reflected after one meeting, “It was becoming increasingly apparent that though I understood the goal-setting procedures and the importance of receiving feedback, I lacked the rehabilitation-specific knowledge to critique, refine or add to his rehabilitation programme.” As a result, I met up with Lynne to discuss how to help Mark regulate or eliminate his concerns. She reminded me of the research that has reported support to be more effective when it is received from providers who possess specific knowledge and expertise (Bianco, 2001; Carson & Polman, 2008; Hardy & Crace, 1993; Johnston & Carroll, 1998a; Tracey, 2008). After chatting to Mark it was agreed that I would seek collaboration from a Chartered Physiotherapist (i.e., Mary) who specialised in sports injuries in order to seek her advice on Mark’s rehabilitation.

Prior to our meeting, with Mark’s consent, I discussed his progress with Mary who was concerned about what exercises he had done and was currently doing. The purpose of the meeting was for Mark to meet with Mary to discuss his concerns, rehabilitation programme and to set a number of goals for the forthcoming weeks. During this meeting, Mary appeared effective in providing Mark with emotional and esteem support by listening to his concerns about his rehabilitation programme,
reassuring him that he had done and was doing appropriate exercises, and encouraging him that he was progressing well and was likely to return before the end of the season (cf. Tracey, 2008). It was evident from getting to know Mark over the previous weeks, “That this was the feedback he had been looking for, and that I couldn’t have provided him with. Not only did he look relieved, he looked much more confident within himself.” Mary also provided Mark with informational support by describing his injury in-depth and suggesting a number of additional rehabilitation exercises (e.g., Romanian dead lift and single-leg straight leg dead lift), which she explained and demonstrated to him. Thereafter, I asked Mary what would be a realistic long-term goal for Mark to set given that he had achieved his previous long term goal of returning to normality (i.e., when Mark should try and aim to return to football). However, as soon as I mentioned this to Mary it soon became apparent from the sudden change in Mark’s body language (e.g., crossing of his arms and legs) that he was uncomfortable discussing this subject and soon let us know that he did not want to set a long-term goal. He later reflected on this incident during the interview, “I think if I had set a certain game, and maybe because I was so desperate to play, I would have just played when maybe I shouldn’t have” (interview extract). I supported Mark’s decision as I was aware that the non-hardy athletes in the second study of this thesis had set unrealistic goals, which ultimately slowed down their perceived rate of recovery. Indeed, Bianco (2000) also found that those injured athletes who returned to sport too soon sustained further injuries.

Mary, Mark, and I did continue, however, to set a number of short-term process goals over the upcoming weeks, and also performance goals that specified end products of the exercises and daily and weekly sessions. As well as focusing on the processes of the movements involved, the performance goals focused on the
duration, distance covered and/or frequency of the rehabilitation exercises, and progressed over time from walking to running, static to dynamic stretches, and from low to high impact strengthening exercises. For example, Mark progressed from a five minute continuous jog to a 40 minute run that also incorporated twists and turns. He reported, “Well chuffed today, managed to run for 40 minutes without it [injury] hurting!!” (diary extract). He reflected on this incident during his interview:

I started off running straight, continuous, just one pace. Just trying to loosen it [hamstring]. It built up from five minutes running and a bit of walking and then 10 minutes running. Just not over doing it. I gradually built it up until I could run for 40 minutes straight. Then after doing that for couple of weeks, then I did the twists and turns.

Although the meeting with Mary had gone well and she had provided support that appeared to satisfy Mark’s needs, I was concerned that at times she had been what I felt was over-technical and wondered whether he would be able to recall all the information she had provided – in particular, the additional exercises she discussed. I decided to discuss this later with Mark. He reported that though she had explained the exercises well, “I’m still a bit confused about how to actually do them.” The following day, I organised a meeting with Mary to get her impressions of the meeting and also to ask whether she had any pictures of the exercises she had discussed and demonstrated. As well as providing me with photocopies for Mark that included pictures with detailed descriptions, she reported, “I really liked the goals we set with Mark. I thought they were a good idea.” In my next consultation with Mark, two days later, I provided Mark with the photocopies of the exercises. We also discussed the effectiveness of the meeting. He reported that the feedback from Mary helped eliminate his concerns about his rehabilitation programme, and that he also
felt more in control of his recovery, more committed to his revised and extended rehabilitation programme and had learned a great deal more about his injury and the recovery process (i.e., hardiness attitudes of control, commitment and challenge, respectively). For example, “Really feel I’m making the difference to my recovery!”, “Feel really motivated again! Want to crack on with the rehab exercises!”, and “Learnt lots of new exercises today!” (diary extracts). He was also pleased with the diagrams that Mary had photocopied for him. He reflected in his diary, “Got some pictures today about exercises. These were good … I could really get an idea of what I’m suppose to be doing.”

Throughout the remaining weeks of this phase, with Mark’s consent, I continued to collaborate with Mary about Mark’s progress. She acted as an important source of informational support for me in terms of assessing Mark’s progress and revising his goals. During one meeting, I informed Mary that Mark was becoming increasingly concerned that he did not have enough football-specific exercises in his rehabilitation programme. He reported, “I hadn’t fully kicked a ball. I had kicked a ball, but I hadn’t kicked one like I would need to in a game. That was the main thing. It wasn’t the running, I was fine with the running and twisting and turning, but it was including a ball and full pace.” She suggested doing more football-specific skills that simulate the competitive game demands. This suggestion was consistent with the findings of the second study of this thesis and associated literature (e.g., Evans, Hardy, et al. 2000). When I relayed this information to Mark, I also discussed with him the possibility of getting Andy involved. Gilbourne and Taylor (1998) reported that the role of the coaching staff in the final phase of rehabilitation was critical. However, Mark was an assistant coach in his spare time and was confident in what football-specific exercises he should be working on.
Although the majority of my consultations with Mark during this phase focused on his thoughts and feelings about his rehabilitation, a number of other issues also emerged. Specifically, Mark was unsure what to do once he had completed his degree and had found it difficult losing his captaincy whilst injured. In the case of the former issue, I provided Mark with both emotional and informational support by normalising his concern and discussing possible future career avenues with him. Although a definitive decision had not been made, he reported, “Was good chatting to Ross today. I managed to bounce a few ideas off him” (diary extract). Another issue surrounded Mark’s captaincy. He reported, “When I was injured, when I wanted to say some stuff from the sides, I had to bite my lip because I didn’t think it was fair when I wasn’t actually playing” (interview extract). As a result, Mark and I discussed the role and functions he could fulfil while he was injured and also reinforced that his loss of captaincy was only temporary, which appeared to satisfy his needs.

*Time Phase IV: Return to Competitive Football*

Mark had a relatively smooth transition back into full-training and league games, which is in contrast to many injured athletes (e.g., Bianco et al., 1999; Evans, Hardy, et al., 2000; Podlog & Eklund, 2006). Indeed, unlike the hardy and non-hardy athletes in the second study of this thesis who experienced a range of negative emotions upon their return to competitive sport, Mark’s only concern during our last consultation in this phase was with regard to his physical fitness. He reported that he generally felt more tired than usual during and immediately after training and games, and especially the morning after, which has been a concern reported by other injured athletes (e.g., Carson & Polman, 2008; Evans, Hardy, et al., 2000; Tracey, 2003). However, before I was able to provide Mark with the support I thought he needed to
address this concern, he reported, “Don’t worry Ross. I know what you’re going to say! Let’s try and put it into perspective! Ha! Ha!” Mark soon put it into perspective, acknowledging it as part and parcel of returning to sport following an injury (i.e., commonplace perspective).

During this final consultation, Mark also handed-in his dairy. We went through his diary together and reflected on the progress he had made, which reinforced the already high level of confidence he had in his hamstring and the surrounding muscles. He reflected that when he returned to competitive football, “I was really confident … like fully confident. No problems. I wasn’t bothered about striking through the ball and the follow through and over stretching it. I was more flexible than I had been before.” Nevertheless, we also discussed the importance during the first few training sessions of taking things slowly and not doing too much too soon. However, because of his position in the team, we agreed that this was not a major concern. Indeed, he reflected in his interview two days later:

Because I was centre back, it was not probably as bad if I was a striker or midfielder where you are doing a lot more continuous running, I was able to focus more on my positional play to avoid having to maybe get myself in the situation of having to overstretch or sprint excessively sort of thing

(interview extract).

During the interview, Mark and I also evaluated the intervention. He felt that the intervention had facilitated his physical and psychological recovery from injury by setting flexible goals that focused on the correct actions of the movements involved in the rehabilitation exercises, using cognitive emotion-focused strategies that challenged and/or lowered his negative thoughts and emotions and facilitated positive feeling states, as well as increasing his awareness of the feedback from his
efforts, which also helped to develop or deepen the hardiness attitudes of commitment, control and challenge. In terms of the regular one-to-one meetings that took place, Mark also reported:

It was a way of blowing off what you’re thinking about. You could tell someone how you think it was going and stuff. … Coming and speaking with you, I can just talk about it. Maybe even if I wasn’t thinking about it during the week, but then sitting down with you just made things click. You get it out sort of thing. Having something structured where you’re supposed to talk as well as the diary as written reflection, having a verbal reflection as well, say some stuff you can’t get into words to write down. It’s easier to say and stuff (interview extract).

In addition, Mark commented on the beneficial effect of completing his diary:

Filling the diary out helped plan my days out sort of thing. Obviously, at the beginning when I wasn’t doing anything, it was just a reflection of my thoughts and stuff. But, when I got into my training, it helped me realise what I have done and what I can move on to and what I’m moving through. It was good. It’s good to look back on when you were first injured and how little you were doing, and then the progress you’ve made. So, obviously sometimes when you felt you haven’t made as much coverage as you should, you could then look back and think two weeks ago I couldn’t even do this and that. I mean, like I’ve never been on crutches before. Having to be on crutches was really annoying for me. And when I thought I wasn’t recovering as much as I would like, I just thought to having to be on crutches and trying to get up stairs, which made me feel a lot better about it (interview extract).
Six days after the interview, Andy allowed Mark to play in the final game of the season, which I attended. I soon found myself, “cringing every time he kicked the ball, jumped up to head the ball, or when he got tackled.” Overall, he looked really confident on the ball and had his captain’s arm badge on, which I knew he would have welcomed. The team scored two goals in the first half and Mark looked on ‘cloud nine’ again as he jumped about with his fellow teammates in celebration. Just after half time, “I felt as if the intervention had come to an end and that I should leave.” I received a text from Mark later that evening, “Hey Ross! Looked 4u after the game, but couldn’t find u! Just wanted to say thanks 4 coming & 4 all your help.”

Summary and Conclusions

The purpose of this study was to help improve the practice of competitive football players through providing a pre-injury and post-injury hardiness intervention. The pre-injury intervention aimed to increase the players’ awareness of how to improve their practice when coping with negative major life events (i.e., a significant predictor of injury occurrence), whereas the post-injury intervention aimed to actually improve the practice of one participant by helping to facilitate his physical and psychological recovery from injury. Findings revealed that the pre-injury intervention was perceived by the players to increase their awareness of, and how to implement, good practice (i.e., coping strategies used by hardy athletes). It also raised their consciousness of their current inability to cope effectively with stressful situations. However, although increasing awareness according to Vealey (1988) and Martens (1987) is an important first step towards athletes learning about psychological strategies, they emphasised that this should eventually give way to implementation. Put simply, athletes should firstly increase their awareness of psychological strategies (i.e., education), then acquire proficiency in these strategies.
(i.e., acquisition) and ultimately integrate these strategies into their everyday routine (i.e., practice). Although somewhat speculative, it might be that as athletes progress through these systematic phases that their resilience to the detrimental effects of negative major life events increases (i.e., risk of injury occurrence; Williams & Andersen, 1998). According to the findings of this study, however, it is important that athletes recognise that resolving negative major life events through acquiring and actively implementing the coping strategies used by hardy athletes might be a slow affair, which may help to explain why previous research has failed to significantly lower the impact of these events (e.g., Kerr & Goss, 1996; Kolt et al., 2004; Perna et al., 2003). Considering that hardiness attitudes are developed or deepened from eliciting feedback from the active efforts of resolving stressful situations, its development might also take a prolonged period of time (cf. Maddi, 1987). Finally, it is also important that sport psychology practitioners recognise that hardiness training programme go above and beyond the recommendation provided within Williams and Andersen’s (1998) model of the prediction of sport injury. The model suggests that practitioners should employ interventions that address the stress response itself (i.e., cognitive and physiological responses). In contrast, hardiness intervention programmes are more proactive and preventative in that they aim to increase athletes’ resilience to injury by resolving the stressors (e.g., negative major life events) that are hypothesised to give rise to the stress response. Future research should compare and contrast the efficacy and effectiveness of these different interventions, which differ in terms of the level at which they occur (i.e., they either focus on the stress response or the stressors that give rise to the stress response).

In contrast to the pre-injury intervention, the aim of the post-injury intervention was to move beyond education to implementation by helping to improve
the practice of one player recovering from injury. Findings suggest that this hardiness intervention helped to facilitate the participant’s physical and psychological recovery from injury. Specifically, cognitive emotion-focused coping strategies were used at injury onset to challenge and/or lower the participant’s negative thoughts and emotions and to facilitate positive feeling states. This involved putting the player’s injury into a positive perspective, which is consistent with the second study of this thesis, mainstream hardiness training programmes (e.g., Maddi, 1987; Maddi et al., 1998) and sport injury research (e.g., Gould et al., 1997b; Tracey, 2003). However, extending previous research, this was insufficient as a strategy in itself during this phase. Findings identified that receiving social support and employing logic to challenge irrational thoughts facilitated the hardiness intervention and helped to meet the needs of the participant. During the participant’s rehabilitation, the usefulness of a number of other intervention strategies emerged to facilitate the participant’s physical and psychological recovery. One strategy included setting goals that focused on the correct actions of the movements involved in the rehabilitation exercises. These goals were also realistic and flexible, which is consistent with the recommendations offered by Evans, Hardy, et al. (2000). The findings from this phase also emphasised the salience of feedback (e.g., from others, signs of progress and achieving goals), which was found to help develop or deepen hardiness and facilitate positive feeling states (e.g., increase confidence). During the final phase (i.e., re-entry into competitive football), the participant reported experiencing concerns in terms of physical fitness, which were lowered by putting them into perspective (i.e., commonplace perspective). Reflecting on his rehabilitation progress also helped to instil confidence in his injured body part, which Evans, Hardy, et al. (2000) and the second study of this thesis identified as an important variable during
this phase. Taken together, the post-injury narrative demonstrated support for Wiese-Bjornstal et al.’s (1998) integrated model. Indeed, personal and situational actors were found to influence the participant’s appraisals of his injury, which subsequently affected how he cognitively, emotionally and behaviourally responded.

This study had a number of strengths. It was the first study to incorporate both pre- and post-injury interventions (i.e., the full sport injury process) and to evaluate a hardiness intervention in the context of sport injury. Although primarily a hardiness intervention, this study also offered support for a number of other strategies. These strategies include different functions of social support and rational-emotive theory, which helped to facilitate the hardiness intervention and to meet the individual needs of the participants. Taken together, this study offers a useful template for future research to examine the effectiveness of interventions pre-injury and post-injury. However, recognising that the methodological approach employed in this study is unlike traditional scientific research that looks for generalisable explanations that might be applied to all contexts, future research should also examine the efficacy of hardiness interventions in an injury context. For example, using research designs that involve control groups and standardised procedures, future research could compare the efficacy of a hardiness training programme in comparison to other interventions (e.g., social support and stress-inoculation training). Researchers should be aware, however, that though efficacy studies provide much better controls to help separate treatment effects from the effects of other intervening variables (i.e., they can infer causality), they are time consuming, cannot examine eclectic interventions as they are too cumbersome and also have the ethical issue of having to withhold treatment from a control group (cf. Martin, Vause, & Schwartzman, 2005; Seligman, 1995; Zaichkowsky, 1980).
CHAPTER 6:

General Discussion and Conclusions
Abstract

The purpose of the final chapter was to draw together the findings and present the implications of this programme of research. Specifically, the chapter opens with a summary of the aims and key findings that emerged from Studies 1, 2 and 3, which is followed with a critical discussion of the conceptual, measurement and theoretical issues emanating from this thesis. The resultant practical implications are then illuminated for athletes, coaches, sports medicine personnel and sport psychology practitioners who have a vested interest in minimising the risk of injury occurrence and/or facilitating athletes’ physical and psychological recovery from injury. Future research directions that aim to support, refute, and/or extend the findings in this thesis are outlined, including the need for interdisciplinary research and theoretical integration. The penultimate section of the chapter provides an overview of the strengths and limitations of the thesis. The chapter draws to a close with an overall conclusion of the central tenets of the programme of research.
Introduction

The purpose of this final chapter is to draw together the findings and present the implications of this programme of research. The chapter is organised into six sections that provide: (a) a summary of the aims and key findings of each of the three studies; (b) a critical discussion of the conceptual, measurement and theoretical issues that emerged from this thesis; (c) the resultant practical implications from the current research; (d) the strengths and limitations of the thesis; (e) future research directions; and (f) a conclusion that draws together the central aspects of this programme of research.

Summary of the Studies

The central purpose of this thesis was to examine the effect of the personality trait of hardiness throughout the sport injury process. Despite the substantial body of literature surrounding hardiness and its positive implications for health and well-being (e.g., Beehr & Bowling, 2005; Funk, 1992; Ouellette, 1993; Maddi, 2002, 2006; Maddi & Khoshaba, 2004), research had yet to examine systematically its role in the psychology of sport injury literature. This omission is surprising considering that Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal, Smith, Shaffer, and Morrey’s (1998) integrated model of response to sport injury suggested that hardiness could lower the risk of, and facilitate recovery from, injury. Consistent with the central tenets of these theoretical models, this programme of research therefore aimed to examine the main and moderating effects of hardiness on the prediction of injury occurrence, and its effects on how athletes’ psychologically respond to and cope with sport injury over time (Study 1); the mechanisms through which hardiness was observed to effect the prediction of, response to and rehabilitation from sport injury (Study 2); and the evaluation of a
hardiness intervention on the practice of non-injured and injured athletes (Study 3). The following subsections provide an overview of the three studies that comprise this thesis.

**Study 1: Major life events, hardiness, coping strategies, and psychological responses: An examination of the sport injury process.** The purpose of this study was to examine the effect of hardiness on the prediction of, and response to, sport injury. As a result, Study 1 aimed to examine the main effect of major life events and the main and moderating effects of hardiness on the prediction of sport injury, and the interaction and main effects of group (i.e., low-hardy versus high-hardy) and time (i.e., from injury onset, during rehabilitation, and subsequent return to competitive sport) on injured athletes’ psychological responses and use of coping strategies. Asymptomatic participants (n=694) were drawn from a number of sports institutions based within the United Kingdom. From the total sample, 104 athletes subsequently incurred an injury. Hierarchical logistic regression and a two-way (Hardiness x Time) repeated measures multivariate analysis of variance were used to analyse the data. Findings revealed a significant main effect for negative major life events and hardiness. Specifically, as negative major life events increased, the likelihood of injury increased; whereas, as hardiness increased, the likelihood of injury decreased. A significant moderating effect of hardiness was also found (i.e., as hardiness increased, the effect of negative major life events on injury occurrence decreased). Although non-significant interactions between hardiness and time were found, post-injury findings revealed significant main effects for group and time on injured athletes’ psychological responses and use of coping strategies. In conclusion, although this study observed that the personality trait of hardiness could help to minimise rates of injury occurrence and facilitate injured athletes’ psychological
recovery from injury, neither the methodological design used nor the data produced provide any explanation as to why this phenomenon occurred.

*Study 2: Major life events, hardiness, coping strategies, and psychological responses: A qualitative follow-up study.* The purpose of this study was to enhance the interpretability and meaningfulness of the findings that emerged from Study 1. Specifically, Study 2 aimed to yield a rich and detailed understanding of the perceived processes underlying the pre-injury and post-injury findings and the contexts in which they reside. Semi-structured interviews were conducted with a purposeful sample of 10 athletes. The transcripts were subsequently analysed and displayed using composite sequence analysis. Findings revealed that high-hardy athletes were less susceptible to injury as a result of negative major life events and were able to facilitate their recovery from injury from possessing a refined repertoire of cognitive and behavioural problem- and emotion-focused coping strategies that they deployed pre-injury and post-injury. Specifically, they re-appraised the significance of negative major life events and injury occurrence, increased their understanding of them, and ultimately formulated and executed plans-of-action to transform them into developmental rather than debilitating experiences. In contrast, their low-hardy counterparts exacerbated the impact of negative major life events and injury occurrence by using a number of cognitive and behavioural avoidance coping strategies such as denial and mental disengagement. These strategies over time had a number of negative implications both pre-injury (e.g., depression and isolation) and post-injury (e.g., non-adherence and re-injury). Taken together, by increasing the interpretability and meaningfulness of the findings that emerged from Study 1, Study 2 offered practical implications for the structure, timing and content of interventions that aim to minimise injury rates and/or facilitate recovery from injury. It was,
therefore, recommended that future research should implement and evaluate a hardiness intervention throughout the sport injury process.

**Study 3: Evaluating a hardiness intervention throughout the sport injury process: An action research study.** The purpose of this study was to evaluate a hardiness intervention throughout the sport injury process. The intervention aimed to introduce the attitudes and coping strategies associated with hardiness to a group of non-injured athletes and an injured athlete. The non-injured athletes were twelve asymptomatic members of a men’s varsity football team. However, during the pre-injury intervention, one of the players became injured and subsequently participated in the post-injury intervention. Within the framework of action research proposed by Evans, Fleming, and Hardy (2000), multiple methods of data collection were used (e.g., questionnaires, interviews, focus-groups, participant observation, diaries, field notes and research log). The findings were presented as a first-person narrative, incorporating a realist and confessional tale. The pre-injury intervention was perceived by the players to increase their awareness of how to improve their practice when coping with negative major life events (i.e., a significant predictor of injury occurrence), whereas the post-injury intervention was found to improve the practice of the injured participant by facilitating his physical and psychological recovery from injury. Although primarily a hardiness intervention, this study also offered support for a number of other strategies. These strategies included different types of social support and using logic and reasoning to dispute irrational thoughts, which helped to facilitate the hardiness intervention and to meet the participants’ individual needs. In summary, this study offers a useful template for future research to evaluate interventions throughout the sport injury process. Future research should aim to
extend these findings by examining the efficacy of hardiness interventions in a sport injury context.

**Conceptual, Measurement and Theoretical Issues**

This section provides an overview of the key conceptual, measurement, and theoretical issues emanating from, or directly related to, this programme of research. The section is divided into six subsections. The first five subsections discuss contemporary conceptual and measurement issues:

- **Does hardiness moderate the relationship between stressful circumstances and health?**
- **What mechanisms does hardiness operate through to maintain health under stressful circumstances?**
- **Do psychological responses and coping strategies change over time?**
- **What measure should future research use to assess major life events?**
- **What measure should future research use to assess psychological responses?**

The final subsection, Supporting and extending models of prediction and response to injury, addresses how the studies in the thesis support and potentially extend Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal et al.’s (1998) integrated model of response to sport injury.

**Does hardiness moderate the relationship between stressful circumstances and health?** Hardiness was originally proposed by Kobasa (1979) to moderate the relationship between stressful major life events and negative health-related outcomes. However, over the past three decades researchers have either supported or refuted Kobasa’s (1979) original hypothesis. For example, some researchers have failed to find the expected stress-buffering effects of hardiness (e.g., Funk & Houston, 1987; King, King, Fairbank, Keane, & Adams, 1998; Manning, Williams,
& Wolfe, 1988; McCranie, Lambert, & Lambert, 1987; Roth, Wiebe, Fillingim, & Shay, 1989; Schmied & Lawler, 1986), whereas others have revealed significant moderating effects (e.g., Bartone, 1999; Kobasa, 1982; Kobasa, Maddi, & Khan, 1982; Kobasa, Maddi, & Puccetti, 1982; Maddi, 1999; Nowack, 1989; Rhodewalt & Zone, 1989; Sinclair & Tetrick, 2000; Waysman, Schwarzwald, & Solomon, 2001; Westman, 1990). Failing to consistently find significant moderating effects across studies has led some researchers to conclude that hardiness does not have stress-buffering effects (e.g., Funk, 1992; Funk & Houston, 1987). However, Hull, Van Treuren, and Virnelli (1987) reported that this issue awaits future research. Study 1 goes some way to providing support for Kobasa’s (1979) original hypothesis, revealing that hardiness does significantly moderate the debilitating effects of negative major life events. Recognising that this study awaits replication, future research should aim to support or refute this issue in the mainstream hardiness literature by continuing to examine whether hardiness moderates the relationship between stressful circumstances and various health-related outcomes.

*What mechanisms does hardiness operate through to maintain health under stressful circumstances?* Mainstream hardiness research has identified four mechanisms by which hardiness has been proposed to maintain health under stressful circumstances, which were supported, extended and/or refined by the findings in this thesis. The first mechanism is adaptive appraisal, which was demonstrated in Study 2. Consistent with mainstream hardiness research (e.g., Rhodewalt & Agustsdottir, 1984; Rhodewalt & Zone, 1989), the findings from Study 2 revealed that high-hardy athletes were able to put stressful circumstances such as negative major life events in perspective (i.e., re-appraising or re-framing their significance). However, the
findings from Study 2 extended and refined previous empirical research by identifying a number of different perspectives:

- **Commonplace perspective**: Normalise the event (e.g., recognise that others have experienced this stressful circumstance)
- **Manageability perspective**: Imagine how things could be worse (e.g., recognise that the stressful circumstance is not as bad as things could get in life)
- **Personal perspective**: Recall long-term hopes and aspirations (e.g., recognise how the stressful circumstance fits into your future plans)
- **Time perspective**: Anticipate a time when the event would be over (e.g., recognise that the stressful circumstance will be over in some definable time)
- **Global perspective**: Compare and contrast the event to global circumstances (e.g., recognise how the stressful circumstance does not measure up to universal issues)
- **Positive perspective**: Search for the positive implications of an event (e.g., recognise that the stressful circumstance has positive aspects)

The second mechanism is the use of problem- and emotion-focused coping strategies, which was observed in Studies 1 and 2. Indeed, Study 1 found that high-hardy athletes who were injured were more likely than their low-hardy counterparts to use problem-focused coping strategies (e.g., active coping) and emotion-focused coping strategies (e.g., focus on and venting of emotions), which is consistent with findings from mainstream hardiness research (e.g., Maddi, 1999; Maddi & Hightower, 1999). However, through using qualitative methods of data collection, Study 2 was able to extend and refine previous hardiness research by identifying the specific coping strategies used and their temporal nature. Specifically, Study 2 observed that high-hardy athletes coped with stressful circumstances (e.g., negative major life events and injury occurrence) by firstly re-appraising their significance,
which lowered negative strain responses (i.e., emotion-focused). Subsequently, these athletes would increase their understanding of the stressful circumstances, which facilitated the formation and execution of constructive plans-of-action to transform them into developmental rather than debilitating experiences (i.e., problem-focused). The third mechanism is the giving and receiving of social support, which was supported in Studies 1 and 2. Consistent with mainstream hardiness research (e.g., King et al., 1998; Williams, Wiebe, & Smith, 1992), Study 1 found that high-hardy athletes who were injured were significantly more likely to seek social support for emotional and instrumental reasons (i.e., emotion-focused coping) than their low-hardy counterparts. The specific reasons for seeking this social support were illuminated in Study 2, which included the need to vent emotions intentionally with others and to increase understanding of stressful circumstances by confiding in others (e.g., parents, coach, friends, partners and university lecturers). The final mechanism is engaging in positive while avoiding negative health practices (e.g., Maddi, Wadhwa, & Haire, 1996; Wiebe & McCallum, 1986). Study 2 found that low-hardy athletes involved themselves in negative health practices (e.g., over-training, substance abuse, and non-adherence), whereas their high-hardy counterparts avoided these practices and also involved themselves in positive health practices such as adhering to their prescribed rehabilitation programmes. Overall, it appears that the mechanisms hardiness operates through to maintain various health-related outcomes under stressful circumstances in mainstream hardiness research are consistent with those within the context of sport injury. Furthermore, the usefulness of these mechanisms was demonstrated in the pre-injury and post-injury interventions in Study 3.
What measure should future research use to assess major life events?

Researchers examining the effect of major life events within the psychology of sport injury literature have employed a number of measures, which recently urged Williams and Andersen (2007) to recommend that future researchers needs to consider what is the most superior measure. The measures previously used include the Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967), Social and Athletic Readjustment Rating Scale (Bramwell, Masuda, Wagner, & Holmes, 1975), Social Readjustment Rating Questionnaire (Coddington, 1972), Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), Athletic Life Experiences Survey (Passer & Seese, 1983), Life Event Questionnaire (Lysens, Auweele, & Ostyn, 1986), Adolescent Perceived Experiences Survey (Compas, Davis, Forsythe, & Wagner, 1987), Sport Experiences Survey (Smith, Ptacek, & Smoll, 1992), Life Events Survey for Collegiate Athletes (Petrie, 1992), Athletic Experiences Survey (Kerr & Goss, 1996), and Life Events List (Van Mechelen, Twisk, Molendijk, Blom, Snel, & Kemper, 1996). The employment of such a vast array of measures not only makes it difficult for researchers to compare results across studies, but also challenging for new researchers in the area to decide which measure is the most appropriate.

To shed some light over which measure of major life events future researchers should employ, it is important that researchers pay attention to a number of criteria, including the (a) nature and content of items, and (b) psychometrics and the manner in which they were established (Herbert & Cohen, 1996; Hurst, 1979; Monroe, 1982; Rabkin & Struening, 1976; Thoits, 1983; Turner & Wheaton, 1997). With regard to the items (i.e., major life events) of the measures, a number of the aforementioned measures were not developed in conjunction with any psychological model of injury or indeed for use with athletic populations. For example, the items...
within the APES were derived from non-athletic adolescents (Compas et al., 1987), the items within the SRRQ were derived from teachers, pediatricians, and mental health workers for non-athletic children (Coddington, 1972), and the items in the LES were developed for the general population (Sarason et al., 1978). As a result, the content validity of these measures with regard to athletic populations must be questioned. Indeed, Turner and Wheaton (1997) in their review of measures of major life events recommended that researchers should ensure the relevance and sensitivity of measures for the population being studied. However, although the items within the SARRS (Bramwell et al., 1975), ALES (Passer & Seese, 1983) AES (Kerr & Goss, 1996), and LEQ (Lysens et al., 1986) were derived from athletic samples, they were specifically developed for male athletes, gymnasts, or first year physical education students. The specialised nature of these measures makes their use difficult for researchers examining the prediction of sport injury, because of the often large initial asymptomatic sample required (see Study 1). In contrast, the items within the LESCA (Petrie, 1992) were derived from a diverse sample of athletes, including both males and females from a variety of sports. However, despite the fact that the LESCA appears to possess superior content validity over and above the other measures, it is important that researchers and practitioners recognise that the measure was developed nearly two decades ago. Therefore, the appropriateness of the items for athletes competing in the 21st century should be questioned (cf. Miller & Rahe, 1997).

In terms of the psychometric integrity of major life event measures, the majority of them fail to establish any evidence of validity and reliability, including the SARRS (Bramwell et al., 1975), ALES (Passer & Seese, 1983), LEQ (Lysens et al., 1986), AES (Kerr & Goss, 1996), SES (Smith et al., 1992), and LEL (Van
Mechelen et al., 1996). In contrast, Petrie (1992) provided evidence of the validity and reliability of the LESCA. Specifically, Petrie found a significant relationship between the LESCA and SARRS (i.e., convergent validity) as well as significant correlations between the LESCA and injury for males and females across sports (i.e., predictive validity). Petrie also found the LESCA to demonstrate adequate test-retest reliability over two different time periods: 1-week and 8-week test-retest reliability for total major life events were .83 and .72, respectively. However, sport psychology researchers should be aware that there is a problem with using test-retest correlations for major life event measures. Indeed, Herbert and Cohen (1996) reported that they, “only indicate whether there is stability in overall scores, not whether specific events are reliably reported over time” (p. 303). Turner and Wheaton (1997) also reported:

… we question the use of test-retest correlations based on total events scores. The practice allows a score of 2, constituted by reporting a job loss and a divorce, to be consistent with a later score of 2 after reporting an assault and a family member dying. The reliability of the total is important, but it is better to achieve that reliability by investigating the consistency of reporting individual items on inventories (p. 46).

Therefore, future researchers should seek alternative approaches to assess the reliability of major life event measures (see Herbert & Cohen, 1996; Turner & Wheaton, 1997).

Taken together, it appears from the preceding discourse that the LESCA is the most valid and reliable measure of major life events. Future research, however, should aim to develop a more contemporary measure of major life events. Petrie and Falkstein (1998) also recommended that future research should develop a population-specific measure of major life events for athletic adolescents. However, when
devising such measures, future researchers need to account for the issue of ‘intracategory variability’. Dohrenwend (2006) suggested that many major life event measures are unfortunately hampered by intracategory variability – an issue which had not yet been acknowledged or examined in the psychology of sport injury literature. To clarify, one consistent feature of the previously used measures is that they tend to operationalise the items at a high level of abstraction. Specifically, rather than providing detailed examples or operational criteria of what constitutes a major life event, the inventories only provide vague item descriptors. For example, the item “Serious injury or illness of close friend” drawn from the LESCA (Petrie, 1992, p. 137) may at first glance appear straightforward. However, no detailed examples or operational criteria are provided to explain to respondents what constitutes a serious injury or illness. Considering the problems researchers have in defining what determines a serious personal injury (e.g., Coddington & Troxell, 1980; Lysens et al., 1986), it is highly likely that respondents will differ in their interpretation and as a result there will be a high degree of variability in the events they report. This makes it almost impossible to meaningfully compare similar events across respondents and empirical studies. Indeed, Dohrenwend (2006) reported that items commonly used in measures of major life events might more accurately be called “categories of events than events per se” (p. 479) and as a result referred to this problem as intracategory variability. Specifically, this measurement issue refers to different events being encompassed under the same major life event item descriptors.

One problem with intracategory variability is that inventories are prone to confound the measurement of major life events with other stressors that are less intense (e.g., daily hassles) or occur more frequently (e.g., chronic stressors). Indeed, as no detailed examples or operational criteria are provided by the measures, the
threshold of what determines a major life event is lowered, which can lead respondents to report more minor or frequent demands in response to items intended to capture major life events (e.g., Avison & Turner, 1988; Dohrenwend, 2006; Dohrenwend, Link, Kern, Shrout, & Markowitz, 1990; McQuaid, Monroe, Roberts, Johnson, Garamoni, Kupfer, et al. 1992). Although intracategory variability has yet to be demonstrated in measures that have been used to predict injury occurrence, it is clear that it could impact upon the conclusions previous researchers have made with regard to the relationship between ‘major life events’ and athletic injury. Therefore, if intracategory variability is found to exist in inventories such as the LESCA (Petrie, 1992) then it is important that strategies are put in place to eliminate or constrain this measurement issue, including the introduction of inclusion and exclusion criteria as well as the use of interview-guides (e.g., Avison & Turner, 1988; Brown & Harris, 1978; Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978; Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993; Hahn & Smith, 1999; Paykel, 1997; Wethington, Almeida, Brown, Frank, & Kessler, 2001).

What measure should future research use to assess injured athletes’ psychological responses? Researchers examining injured athletes’ emotional responses have primarily used the Profile of Mood States (POMS; McNair, Lorr & Droppleman, 1971 – e.g., Daly, Britton, Van Raalte, Petitpas, & Sklar, 1995; Green & Weinberg, 2001; Morrey, Stuart, Smith, & Wiese-Bjornstal, 1999; Quinn & Fallon, 1999; Udry, 1997). Although these studies generally demonstrate that athletes’ mood states shift from a negative to more positive mood state over time, researchers and practitioners should interpret these findings with caution with regard to how athletes’ emotionally respond to injury. Indeed, the POMS measures mood states rather than emotional responses and was also not developed to measure or
predict variables derived from any psychological response model of injury. Although
not disputing the potential role mood states may play in athletes’ recovery from
injury, future researchers interested in examining athletes’ emotional responses to
injury should consider employing other measures. Encouragingly, Evans, Hardy,
Mitchell, and Rees (2008) recently offered a measure that goes someway to
addressing this conceptual issue, namely the Psychological Responses to Sports
Injury Inventory (PRSII). The PRSII encompasses six subscales: devastation,
dispersited, reorganisation, isolation, feeling cheated, and restlessness.

Study 1 employed the PRSII to measure athletes’ psychological responses
over time. Findings demonstrated support for its ability to discriminate between
individual differences (i.e., hardy and non-hardy athletes) and to account for the
transient nature of athletes’ psychological responses to injury. For example, hardy
athletes were found to be less devastated, less dispirited, and more reorganised than
their non-hardy counterparts. Studies 2 and 3 also offered support for the content
validity of the PRSII. Indeed, injured athletes reported experiencing a number of
psychological responses that were found to reflect the items in the subscales of the
PRSII, including devastation (i.e., devastation subscale), lacking motivation (i.e.,
dispersited subscale), confidence (i.e., reorganisation subscale), isolation (i.e.,
isolation subscale), jealousy (i.e., feeling cheated subscale) and anxiety (i.e.,
restlessness subscale). Taken together, the PRSII appears to demonstrate predictive
and content validity in relation to injured athletes’ psychological responses. It also
addresses the need for measures that are theoretically derived and population-specific
(e.g., Bianco, 2001; Evans & Hardy, 1999). As a result, it is recommended that future
research employs the PRSII to measure athletes’ psychological responses.
Do psychological responses and coping strategies change over time? A central tenet of Wiese-Bjornstal et al.’s (1998) integrated model of response to sport injury is the concept of change. Although a number of researchers have employed methodological designs that do not account for this concept, including one point of data collection (e.g., Daly et al., 1995; Granito, 2001, 2002; Green & Weinberg, 2001; Gould, Udry, Bridges, & Beck, 1997b; Hurley, Moran, & Guerin, 2007; Udry, Gould Bridges, & Beck, 1997), it is increasingly becoming accepted by those researchers who have employed longitudinal research designs that athletes’ psychological responses and use of coping strategies change over time (e.g., Bianco, Malo, & Orlick, 1999; Carson & Polman, 2008; Evans, Hardy, & Fleming, 2000; Podlog & Eklund, 2006; Tracey, 2003; Udry, 1997). Consistent with these empirical studies and future recommendation from Evans, Mitchell, and Jones (2006), Studies 1, 2 and 3 accounted for, and examined the temporal changes implicit within Wiese-Bjornstal et al.’s (1998) integrated model. For example, Study 1 employed an intraindividual approach and found injured athletes’ psychological responses and use of coping strategies to change over time. Specifically, the onset of injury was associated with heightened feelings of devastation, dispirited, feeling cheated, restlessness, and isolation, which were found to subside during their rehabilitation and even more so during their return to competitive sport. In contrast, the subscale reorganisation, which is associated with confidence and feeling mentally stronger, was shown to increase during rehabilitation and upon subsequent return to competitive sport. With regard to the temporal pattern of coping strategies, the use of problem-focused coping was observed to increase from injury onset to rehabilitation and remained stable during the return to sport. In contrast, injured athletes’ use of emotion-focused coping and avoidance coping were found to remain relatively stable
from injury onset to rehabilitation, but significantly decreased upon the return to competitive sport. In summary, these findings suggest that injured athletes’ psychological responses and use of coping strategies change over time. Future researchers interested in examining how athletes’ psychologically respond to and cope with injury should continue to employ intraindividual approaches that account for the temporal nature of injury, which will help to facilitate the development of appropriate interventions that aim to facilitate athletes’ physical and psychological recovery from injury (Study 3).

**Supporting and extending models of prediction and response to injury.** The studies in this thesis aimed to evaluate the central tenets of Williams and Andersen’s (1998) model of the prediction of sport injury, and Wiese-Bjornstal et al.’s (1998) integrated model of response to sport injury. In terms of Williams and Andersen’s (1998) model, a number of central tenets of this model were supported:

- Negative major life events predicted injury occurrence (Study 1)
- Hardiness predicted injury occurrence (Study 1)
- Hardiness moderated the relationship between major life events and injury occurrence (Study 1)

In addition, this programme of research also potentially extended this model in several ways. Firstly, the model hypothesises that major life events influence athletes’ susceptibility to injury through the stress response during a demanding athletic situation, which is the mechanism through which injury is proposed to occur. However, the findings from Study 2 suggested that negative major life events have a number of physiological, psychological and behavioural consequences. Therefore, rather than major life events influencing the stress response *per se*, it might be that it is their consequences that affect the severity of the stress response during a
potentially demanding athletic situation and ultimately increase the risk of injury. Secondly, the model suggests that a history of many major life events will indirectly increase the likelihood of injury. However, findings from Study 2 suggest that this hypothesis might be more accurately denoted as a history of many unresolved major life events will increase the likelihood of injury (cf. Turner & Avison, 1992).

Thirdly, the model suggests that the stress response consists of cognitive (e.g., cognitive appraisals and peripheral narrowing) and physiological responses (e.g., increased muscle tension). Although somewhat subjective, Study 3 identified that another potential dimension could be behavioural responses such as acting out (e.g., flying into tackles during a competitive match). Fourthly, and finally, this model recommends that interventions should target the stress response directly. Findings from Study 2 and recommendations from research concerned with stress-management interventions (e.g., Cooper, Dewe, & O’Driscol, 2001) suggest that a more proactive and preventative approach would be to focus on resolving or eradicating the stressors that give rise to the stress response (e.g., potentially demanding athletic situations and/or major life events). Indeed, Study 2 observed that negative major life events can be resolved, and Williams and Andersen (2007) also reported that, “modifications can be made to reduce unnecessary sources of psychological stress in the practice and competitive environment” (p. 398).

Although this thesis did not refute any aspects of Wiese-Bjornstal et al.’s (1998) integrated model, it did support a number of its central tenets, including:

- Pre-injury variables affected post-injury responses (Study 1).
- Post-injury personal variables (e.g., injury history and recovery status) indirectly affected athletes’ psychological and behavioural responses to injury (Studies 2 & 3).
• Post-injury situational variables (e.g., time in season and provision of social
support) indirectly affected athletes’ emotional and behavioural responses to
injury (Studies 2 & 3).

• Psychological and behavioural responses to injury affected physical and
psychological recovery outcomes (Studies 2 & 3).

• Cognitive appraisals accounted for the relationship between post-injury personal
and situational variables and athletes’ emotional and behavioural responses to
injury (Study 3).

• Responses to injury changed over time (Study 1, 2 & 3).

In addition, the thesis also extended one aspect of Wiese-Bjornstal et al.’s (1998)
model. At present, the model only considers the physical and psychological
outcomes associated with injury and its rehabilitation. However, the findings from
Study 2 suggest that this outcome component of the model could be extended to
include a broader range of outcomes, including social outcomes such as increased
social support network, increased perception and strengthening of social support
network, and improved ability to sympathise and empathise with injured athletes.

Practical Implications

A number of practical implications emerged from this programme of
research, which have relevance for athletes, coaches, sports medicine personnel and
sport psychology practitioners. With regard to minimising rates of injury incurrence,
the author agrees with Williams and Andersen’s (2007) suggestion that, “In the same
way that coaches and other sports personnel attempt to reduce injury risk through
vehicles such as conditioning programs, teaching proper techniques, and providing
advances in equipment and facilities design, the time has come to reduce injury risk
from psychosocial causes” (p. 398). As part of this process and based on the findings
of this thesis, sport psychologists should aim to increase sports teams and individual athletes’ awareness of the maladaptive effects of negative major life events and the adaptive effects of the attitudes and coping strategies associated with hardiness on the prediction of occurrence (Studies 1 & 2). For example, sport psychology practitioners could conduct group workshops and/or one-to-one consultations that increase awareness of the advantages of the hardiness attitudes of commitment, control and challenge, and the disadvantages of withdrawal, powerlessness and threat (Study 3). Subsequently, sport psychologists should aim to change passive audiences into active participants by enabling athletes to implement the coping strategies used by high-hardy athletes to transform stressful situations into opportunities for personal development and to use the resultant feedback to develop and/or deepen the hardiness attitudes (Maddi, 1987). It is important that sport psychologists recognise, however, that hardiness training programmes go above and beyond the recommendations provided within Williams and Andersen’s (1998) model of the prediction of sport injury. This model suggests that practitioners should employ interventions that address the stress response itself, which involves changing how athletes appraise stressful situations and recognising and controlling for physiological and attentional changes. In contrast, hardiness intervention programmes are more proactive and preventative in that they aim to increase athletes’ resilience to injury by resolving the stressors (e.g., negative major life events and injury occurrence) that are hypothesised to give rise to the stress response; hence, alleviating the overall demand placed upon sports performers (Studies 2 & 3).

In terms of post-injury interventions, practitioners should aim to minimise the potentially damaging consequences of injury and facilitate athletes’ physical and psychological recovery. Based on the findings of this thesis and associated research
(e.g., Bianco, 2001; Gould et al., 1997b; Maddi & Khoshaba, 2004; Tracey, 2003), practitioners working with injured athletes should focus on helping athletes to regulate their psychological responses at injury onset by helping them to put their injury into perspective (Studies 1, 2 & 3), providing them with or encouraging them to seek out emotional, tangible and esteem support (Study 3), and/or using logic and rational thinking to challenge irrational thoughts (Study 3). As a result of employing these strategies, injured athletes will be able to invest more time in productive tasks (e.g., seeking out an understanding of their injury) as well as avoiding the debilitating effects of experiencing negative psychological responses (e.g., strained personal relations). Consistent with associated research (e.g., Evans & Hardy, 2002a; Evans, Hardy, et al., 2000) and the findings of this thesis, practitioners should encourage injured athletes to effectively set long- and short-term goals during rehabilitation to help facilitate physical and psychological recovery (Studies 1, 2 & 3). However, particularly during the early phases of rehabilitation, which are often characterised by minor setbacks, practitioners should try to set goals that adhere to the principles of effective goal setting (e.g., specific, measurable and realistic), which will help to ensure sufficient flexibility to avoid the demotivating effect of not achieving them (Studies 2 & 3). In addition, it is important that practitioners encourage athletes to pay attention to feedback from their own efforts as well as others throughout their rehabilitation. This feedback can have adaptive effects such as developing and/or deepening the hardiness attitudes of commitment, control and challenge (Studies 2 & 3). Finally, simulation training also emerged as an effective strategy to help athletes prepare themselves for their return to competitive sport (Study 2). During the final stage of athletes’ recovery from injury, the return to competitive sport, coaches and health practitioners are advised to help athletes’
regulate maladaptive psychological responses by putting them into perspective (e.g., positive or commonplace perspective; Studies 2 & 3) and to increase their confidence in their injured body part by encouraging them to reflect on the successful progress made during rehabilitation (Studies 1, 2 & 3).

Future Research Directions

As a result of this programme of research, a number of recommendations are considered salient for future research. The first avenue for future research is to replicate the three studies in this thesis, which will help to substantiate their findings. Second, future research should aim to extend the studies in this thesis by embracing interdisciplinary research, which will help to widen the focus of sport injury research (cf. Brewer, Andersen, & Van Raalte, 2002). For example, Study 1 only examined psychosocial predictors of, and responses to, injury. However, future research should consider these psychosocial variables in conjunction with, for example, physiological and biomechanical variables of occurrence, response, and rehabilitation—possibly exploring their additive and/or interactive effects. Indeed, Evans, Mitchell, and Jones (2006) reported that, “Future research needs to examine the interaction between physical, psychological, medical, sociological, and possibly biomechanical variables in a heuristic approach to injury research” (p. 308). Third, although this thesis embraced a unidimensional conceptualisation of hardiness, future research should compare and contrast or integrate the different conceptualisations of hardiness (i.e., unidimensional, multidimensional and synergistic) and outline their implications in the context of injury. This avenue of future research will help to demystify the underlying structure of hardiness and address a current gap in the mainstream hardiness literature (Funk, 1992; Funk & Houston, 1987). Fourth, although future research should continue to use the PRSII (Evans et al., 2008) as a population-
specific and theoretically derived measure of the intensity of injured athletes’ psychological responses (Study 1), future research should also consider the orientation of injured athletes’ responses in relation to their recovery process (i.e., whether they are further appraised, interpreted and ultimately labelled as facilitative or debilitating towards recovery; cf. Mellalieu, Hanton, & Fletcher, 2006; Fletcher, Hanton, & Mellalieu, 2006). Indeed, Wiese-Bjornstal et al. (1998) reported that, “it is worthwhile to consider the possibility that not all negative emotions are dysfunctional in the recovery process” (p. 53), which was also recently suggested by Gallagher and Gardner (2007). For example, although a number of researchers have reported that anger can be counterproductive to the healing process (e.g., Gordon, Potter, & Ford, 1998; Smith, Scott, O’Fallon, & Young, 1990), Wiese-Bjornstal et al. (1998) reported that when negative emotions such as anger is, “appropriately controlled and focused it might indeed exhibit itself as a fighting spirit, which in turn may have a positive effect on coping with a rehabilitation program” (p. 58). Fifth, future research should not only endeavour to elicit the perceptions and appraisals of athletes themselves, but also coaches, friends, family and health practitioners (e.g., physiotherapists) in order to provide a more comprehensive account of the factors that affect the occurrence of, response to and rehabilitation from sport injury. Indeed, all these individuals were found to have salient roles throughout the sport injury process in Studies 2 and 3. For example, friends and family in particular were found to provide practical social support during the onset of injury (Study 2 and 3). Sixth, there is a demand for more interventions in both the pre-injury and post-injury phases, including the need to examine the efficacy of a hardiness intervention with non-injured and injured populations. Considering that social support also proved to be an effective strategy in Studies 2 and 3, future research could also determine
which interventions (i.e., hardiness or social support) are the most efficacious, under what circumstances and with which athletes. Finally, and perhaps most importantly, future research should continue to integrate pre-injury and post-injury phases to help examine the interrelations among pre- and post-injury variables, which will develop a more unified body of research that informs the sport injury process. Once future research has established a sufficient grounding of the interrelationships between these two bodies of research, they should then aim to integrate Williams and Andersen’s (1998) model of the prediction of sport injury and Wiese-Bjornstal et al.’s (1998) model of the responses to sport injury. Indeed, Brewer (2007) reported:

… there is much to be gained by developing a comprehensive model of sport injury in an attempt to describe and explain the processes by which athletes incur and recover from injuries. The component and interrelationships among variables in the model of the psychological response to sport injury proposed by Wiese-Bjornstal et al. (1998) closely resemble those in the model of sport injury occurrence offered by Williams and Andersen (1998). Presumably, these two models can be integrated to provide a dynamic, psychologically based conceptualisation of sport injury from preinjury to postrehabilitation (p. 418).

This theoretical integration will provide a platform for systematic investigation of the entire sport injury process, which in turn will help to develop a focused and unified body of knowledge. In addition to such theoretical integration, future researchers should also account for how Williams and Andersen’s (1998) and Wiese-Bjornstal et al.’s (1998) models could be extended given the current findings in this thesis and associated literature. The following are some of the ways these models could be extended. First, Study 2 extended Williams and Andersen’s (1998)
model by illuminating the perceived mechanisms through which major life events may affect the stress response and subsequent risk of injury. Second, Williams and Andersen’s (1998) model suggests that the stress response consists of cognitive and physiological responses. Although somewhat tentative, Study 3 identified that another potential dimension could be behavioural responses such as acting out.

Third, Williams and Andersen’s (1998) model hypothesises that a history of many major life events will increase the likelihood of injury; however, the findings from Study 2 suggested that this might be more accurately denoted as a history of many unresolved major life events will increase the likelihood of injury (cf. Turner & Avison, 1992). Fourth, Williams and Andersen’s (1998) model should not only consider interventions that target the stress response, but also that address the stressors that give rise to the stress response (e.g., potentially demanding athletic situations and/or major life events; Studies 2 & 3). Fifth, Wiese-Bjornstal et al.’s (1998) model could be extended to include a broader range of outcomes from injury and the recovery process, including social outcomes such as an increased social support network (Study 2). Sixth, although the definition of injury used in Study 1 was consistent with Williams and Andersen’s (1998) model, Udry and Andersen (2008) recently reported that this model could be extended to not only consider injuries that occur during training or competition, but also injuries that occur outside of the sporting domain. Seventh, these models could be potentially extended to include adverse health outcomes other than injury such as athlete illness (Bianco et al., 1999; Petrie & Perna, 2004). For example, Bianco et al. (1999) reported that, “From a conceptual standpoint, the model developed by Wiese-Bjornstal and colleagues (1998) may adequately represent the experience of debilitating athlete illness. In terms of practical applications, it may be found that sport injury and illness
interventions can be guided by similar principles” (p. 158). Eighth, Wiese-Bjornstal et al.’s (1998) model should also take into account athletes’ return to competitive sport (Bianco et al., 1999; Evans, Hardy, et al., 2000; Podlog & Eklund, 2006), which was demonstrated as an important phase in Studies 1, 2 and 3. Bianco et al. (1999) also reported in relation to Wiese-Bjornstal et al.’s (1998) model, “Given that the psychological processes associated with the return to sport appear similar to those involved in rehabilitation, it would be reasonable to suggest that the model be extended to include this phase of the injury experience” (p. 167). Ninth, Wiese-Bjornstal et al.’s (1998) model considers cognitive, emotional, and behavioural responses to injury, and psychological and physical recovery outcomes. However, Appaneal, Perna, and Larkin (2007) recently examined physiological responses to severe sport injury among competitive male athletes. Findings revealed that athletes with injuries demonstrated significantly greater skin conductance reactivity compared to a control group of non-injured athletes. Therefore, Wiese-Bjornstal et al.’s model could be extended to include physiological responses.

A final extension or adaptation to the aforementioned stress-based models relates to the rhetoric used within them. Although this programme of research aimed to align its rhetoric whenever possible with recent conceptual definitions of stress and its related constructs (Fletcher et al., 2006), it is important that the rhetoric used in future theoretical models is also considered. To clarify, the term ‘stress’ is often used interchangeably to describe a stimulus or a response, despite there being a clear conceptual distinction between the terms ‘stress’, ‘stressor’ and ‘strain’. Fletcher et al. (2006) recently provided the following definitions:
• **Stress**: “an ongoing process that involves individuals transacting with their environments, making appraisal of the situations they find themselves in, and endeavoring to cope with any issues that may arise” (p 329)

• **Stressors**: “environmental demands (i.e., stimuli) encountered by an individual” (p. 329)

• **Strain**: “an individual’s negative psychological, physical and behavioral responses to stressors” (p. 329)

Stressors, therefore, are events, situations or conditions, and strain is a person’s negative reaction to stressors. The term stress, therefore, should not be used to describe specific components of the transaction between the person and the environment (Lazarus, 1990), but rather represent the overall process incorporating stressors, strains, appraisals and coping responses. Consequently, the tautology ‘stress response’ used in Williams and Andersen’s (1998) model should be avoided since stress already encapsulates the responses of this process (i.e., strain).

**Strengths and Limitations**

The author acknowledges that the methodological design and methods employed in each study of this thesis have their own inherent limitations: Study 1 only used one single data collection point to measure pre-injury variables and did not employ a non-injured control group post-injury, Study 2 used retrospective recall that can be hindered by attribution effects and memory decay, and Study 3 failed to control for the potential effects of confounding variables. However, although these studies could perhaps have been improved by examining pre-injury variables on multiple occasions over time and using a non-injured control group post-injury (Study 1), using interviews concurrently throughout the sport injury process (Study 2), and providing much better controls to separate treatment effects from the effects
of other intervening variables (Study 3), it is important to recognise that though these improvements might have enhanced the credibility of the findings, they in turn could have presented other limitations. For example, although interviewing athletes concurrently pre-injury and throughout their recovery from injury may have addressed possible concerns about the accuracy of recall in Study 2, it may have also affected the participants’ experiences. Indeed, Tracey (2003) reported that she indirectly provided athletes with emotional support from interviewing them during their recovery, which in turn may have influenced their responses during subsequent interviews. As Hardy, Jones, and Gould (1996) asserted, “every method has both its strengths and weaknesses” and “one ‘perfect’ approach for advancing knowledge does not exist” (p. 268).

Despite the limitations of the methods employed in this thesis, this programme of research possesses a number of key strengths. The main strength is that the studies in the thesis have not focused on ‘safe’ questions that are limited in scope and do not challenge existing scientific research. Rather, the studies in this thesis have emanated from considerable thought and planning of the most critical questions in need of study, the best methods for answering those questions, and how they will contribute to the advancement of knowledge and understanding in the psychology of sport injury literature. As a result, although each study in this thesis has evoked considerable uncertainty and discomfort in the author, it is believed that by going where researchers have not gone before has ultimately enhanced the quality of this thesis and its contribution to the literature. Indeed, Hardy et al. (1996) reported that though, “It is much easier to conduct research on questions for which we can anticipate what answers will be derived, with existing theories to guide us, with methods we have used in the past, and in area where we have a great deal of
experience” (p. 276), examining what they refer to as ‘risk-taking research’ will help to advance knowledge at a faster pace. Furthermore, the studies in this thesis also fall under their characteristics of significant or high impact studies, which are (a) asking important questions, (b) conducting studies which are part of a line of systematic research, and (c) using and striving for theory development (Hardy et al., 1996). Indeed, rather than conducting a number of isolated studies, this thesis provides a systematic line of enquiry that is the first to integrate pre-injury and post-injury domains of research, as well as supporting and extending theoretical models in this area of research. Another important strength of the thesis is the diversity of quantitative and qualitative methods employed (e.g., questionnaires, interviews, focus-groups, participant observation, diaries, field notes and research log), which were adopted to address the research questions. Indeed, Vealey (1988) reported, “Research should be driven by the problem or question, with methodology given a secondary role as the vehicle by which the question is asked. Problems occur when researchers let the method drive the question” (p. 372). A final strength of this thesis was that it also addressed a number of future recommendations that have been identified by previous researchers:

- Petrie and Falkstein (1998) and Williams and Andersen (2007) recommended future research should use prospective rather than retrospective research designs to examine the prediction of injury occurrence. This recommendation was addressed in Study 1.

- Evans and Hardy (1999) recommended future research should use population-specific measures whenever possible that have been shown to possess appropriate levels of content validity. This recommendation was fulfilled in Study 1 by employing the PRSII (Evans et al., 2008).
• Andersen and Williams (1988) recommended future research should examine the affect of hardiness on the prediction of injury occurrence, which was achieved in Studies 1 and 2.

• Grove and Bianco (1999) recommended future research should examine the affect of hardiness on athletes’ responses to injury, which was accomplished in Studies 1 and 2.

• Evans and Hardy (1999) recommended future research should account for the temporal changes implicit within models of injury, which was addressed in Studies 1, 2 and 3.

• Brewer (2007) recommended that future research should account for the full temporal sport injury process, which was addressed in Studies 1, 2 and 3.

• Cupal (1998) recommended that future research should examine the effects of multi-modal intervention strategies on the predication of, and response to, sport injury, which was addressed in Study 3.

• Williams and Andersen (1998) and Evans et al. (2006) recommended that future research should employ methodologies that detect the mechanisms that underlie intervention effects. This recommendation was achieved in Study 3 by using action research.

• Gilbourne, Taylor, Downie, and Newton (1996) recommended collaborative future research that involves sports medicine personnel. This recommendation was addressed in Study 3 through seeking collaboration with a Chartered Physiotherapist.
Conclusion

The purpose of this thesis was to provide a systematic programme of research that explored the effect of hardiness throughout the sport injury process. Findings from this programme of research have demonstrated that athletes high in hardiness are less prone to injury, and that hardiness can facilitate the rate and quality of their recovery from injury. These athletes were found to achieve these desirable outcomes from possessing the resilient attitudes of commitment, control, and challenge, and a refined-repertoire of cognitive and behavioural emotion- and problem-focused coping strategies. The usefulness of these resilient attitudes and strategies were further observed through a hardiness intervention with non-injured athletes and an injured athlete. Taken together, it is believed that this thesis has achieved its purpose, and has important implications for coaches, health practitioners and sport psychologists who have a vested interest in minimising rates of injury occurrence and/or facilitating athletes’ physical and psychological recovery from injury.
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Appendices
Appendix 1
Listed below are 69 events that sometimes occur in the lives of college athletes. These events often produce change within an individual’s life that requires some adjustment by the individual. For each event that you have experienced within the last year (12 months), indicate what kind of effect it had on your life when the event occurred. A rating of -4 would indicate that the event had an extremely negative effect on you. A rating of +4 would indicate that the event had an extremely positive effect on you. For those events that have happened more than once, indicate the average effect across all occurrences. If you have not experienced an event within the last year, leave that item blank. The events are listed in no particular order, and there are no right or wrong answers. Please respond to each event honestly as it applies to you.

<table>
<thead>
<tr>
<th>Event</th>
<th>Extremely Negative</th>
<th>Negative</th>
<th>Moderately Negative</th>
<th>Somewhat Negative</th>
<th>Somewhat Positive</th>
<th>Moderately Positive</th>
<th>Extremely Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Marriage</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>2. Death of mate (boyfriend, girlfriend, spouse, significant other)</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>3. Major change in sleeping habits (increase or decrease in amount of sleep)</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>4. Death of a close family member</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Mother</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Brother</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Sister</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Grandfather</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Grandmother</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>Other</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>5. Major change in eating habits (increase of decrease in food intake)</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>6. Death of close friend(s)</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>7. Outstanding personal achievement</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>8. Male: mate pregnant</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>9. Female: becoming pregnant</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>10. Sexual difficulties</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>11. Being fired from job</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
</tr>
<tr>
<td>12. Being apart from mate (boy/girlfriend, spouse, etc) due to sport</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
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<tr>
<td>13. Serious injury or illness to close family member(s)</td>
<td>-4</td>
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<td>-4</td>
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<td>Mother</td>
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<td>-4</td>
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<td>Grandfather</td>
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<td>Grandmother</td>
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<td>-1</td>
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<td>14. Major change in the number (more/less) of arguments with mate</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>+1</td>
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<tr>
<td>15. Major personal injury or illness</td>
<td>-4</td>
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<td>-1</td>
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<tr>
<td>16. Major change in the frequency (increased or decreased) of social activities due to participation in sport</td>
<td>-4</td>
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<td>+3</td>
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<tr>
<td>17. Serious injury or illness to close friend</td>
<td>-4</td>
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<td>-2</td>
<td>-1</td>
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<td>+2</td>
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<tr>
<td>18. Breaking up with mate (boy/girlfriend, etc)</td>
<td>-4</td>
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<td>-2</td>
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<tr>
<td>19. Beginning a new school experience (beginning college, transferring college etc)</td>
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<td>-2</td>
<td>-1</td>
<td>+1</td>
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<td>20. Engagement</td>
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<td>-1</td>
<td>+1</td>
<td>+2</td>
<td>+3</td>
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<tr>
<td>21. Academic probation/ineligibility</td>
<td>-4</td>
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<td>22. Being dismissed from dorm or other residence</td>
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<tr>
<td>24. Major change in relationship with coach (better or worse)</td>
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<td>-2</td>
<td>-1</td>
<td>+1</td>
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<td>25. Failing a course</td>
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<td>26. Major change in the length and/or conditions of practice/training (better or worse)</td>
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<td>27. Financial problems concerning school</td>
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<tr>
<td>28. Major change in relationship with family member(s) (better or worse)</td>
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<td>29. Conflict with roommate</td>
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<td>30</td>
<td>Male: mate having an abortion</td>
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<td>31</td>
<td>Female: having an abortion</td>
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<td>Major change in the amount (more or less) of academic activity (home work, class time, etc)</td>
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<td>33</td>
<td>Pressure to gain/lose weight-due to participation in sport</td>
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<td>Major change in relationship(s) with team-mate(s) (better/worse)</td>
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<td>35</td>
<td>Discrimination from teammates/coaches</td>
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<td>Major change in use of alcohol/drugs (increased or decreased)</td>
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<td>Major change in level of athletic performance in actual competition (better or worse)</td>
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<td>Divorce or separation of your parents</td>
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<td>Major change in level of responsibility on team (increased/decreased)</td>
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<td>Not attaining personal goals in sport</td>
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<td>Major change in playing status on team</td>
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<td>Being absent from school (classes) because of participation in sport</td>
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<td>43</td>
<td>Troubles with athletic association and/or athletic director</td>
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<td>44</td>
<td>Major change in playing time (playing more or less) – due to injury</td>
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<td>Major errors/mistakes in actual competition</td>
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<tr>
<td>No recognition/praise of accomplishments from coaching staff</td>
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<td>Pressure from family to perform well</td>
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<td>Loss of confidence due to injury</td>
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<td>Unable to find a job</td>
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<td>Change in coaching staff</td>
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<tr>
<td>Female: menstrual period/PMS</td>
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<tr>
<td>Major change in level of academic performance (doing better or worse)</td>
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<tr>
<td>Making career decisions (applying to graduate school, interviewing for jobs, etc)</td>
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<td>Being cut/dropped from the team</td>
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<td>Continual poor performance of team</td>
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<td>Change in graduation schedule</td>
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<tr>
<td>Major change in family finances (increased or decreased)</td>
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<tr>
<td>Major change in attitude toward sport (like/enjoy more or less)</td>
<td>-4 to +4</td>
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<tr>
<td>Victim of harassment/abuse (sexual, emotional, physical)</td>
<td>-4 to +4</td>
<td></td>
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<tr>
<td>Victim of personal attack (rape, robbery, assault, etc)</td>
<td>-4 to +4</td>
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</table>

Other events might have occurred to you in the past year (and affected you in a positive or negative manner) but were not included in this list. If there were such events, please list them below.
Appendix 2
Below are statements about life that people often feel differently about. Circle a number to show how you feel about each one. Read the items carefully and indicate how much you think each one is true in general. There are no right or wrong answers; just give your honest opinion.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all true</th>
<th>A little true</th>
<th>Quite true</th>
<th>Completely true</th>
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<tbody>
<tr>
<td>1</td>
<td>Most of my life gets spent doing things that are worthwhile</td>
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<td>2</td>
<td>Planning ahead can help avoid most future problems</td>
<td>0</td>
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<td>3</td>
<td>Trying hard doesn’t pay, since things still don’t turn out right</td>
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<td>4</td>
<td>No matter how hard I try, my efforts usually accomplish nothing</td>
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<td>5</td>
<td>I don’t like to make changes to my everyday schedule</td>
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<td>The “tried and true” ways are always the best</td>
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<tr>
<td>7</td>
<td>By working hard you can always achieve your goals</td>
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<td>8</td>
<td>Most working people are simply manipulated by their bosses</td>
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<td>3</td>
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<tr>
<td>9</td>
<td>Most of what happens in life is just meant to be</td>
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<tr>
<td>10</td>
<td>It’s usually impossible for me to change things at work</td>
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<tr>
<td>11</td>
<td>New laws should never hurt a person’s pay check</td>
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<td>3</td>
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<tr>
<td>12</td>
<td>When I make plans, I’m certain I can make them work</td>
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<td>3</td>
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<tr>
<td>13</td>
<td>It’s very hard for me to change a friend’s mind about something</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>14</td>
<td>It’s exciting to learn something about myself</td>
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<tr>
<td>15</td>
<td>I really look forward to my work</td>
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<tr>
<td>16</td>
<td>Politicians run our lives</td>
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<td>17</td>
<td>If I’m working on a difficult task, I know when to seek help</td>
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<td>People who never change their mind usually have good judgement</td>
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<td>I like a lot of variety in my work</td>
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<td>Most of the time, people listen carefully to what I say</td>
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<td>21</td>
<td>Daydreams are more exciting than reality for me</td>
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<td>24.</td>
<td>Thinking of yourself as a free person just leads to frustration</td>
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<td>25.</td>
<td>Trying your best at work really pays off in the end</td>
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<tr>
<td>26.</td>
<td>My mistakes are usually very difficult to correct</td>
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<td>27.</td>
<td>It bothers me when my daily routine gets interrupted</td>
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<td>28.</td>
<td>It’s best to handle most problems by just not thinking of them</td>
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<tr>
<td>29.</td>
<td>Most good athletes and leaders are born, not made</td>
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<td>30.</td>
<td>I often wake up eager to take my life up wherever it left off</td>
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<td>31.</td>
<td>Lots of times, I really don’t know my own mind</td>
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<td>1</td>
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<td>32.</td>
<td>I respect rules because they guide me</td>
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<td>33.</td>
<td>I like it when things are uncertain or unpredictable</td>
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<td>34.</td>
<td>I can’t do much to prevent it if someone wants to harm me</td>
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<td>35.</td>
<td>People who do their best should get full support from society</td>
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<td>36.</td>
<td>Changes in routines are interesting to me</td>
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<td>37.</td>
<td>People who believe in individuality are only kidding themselves</td>
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<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>I have no use for theories that are not closely tied to facts</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Most days, life is really interesting and exciting for me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>I want to be sure someone will take care of me when I’m old</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>It’s hard to imagine anyone getting excited about working</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>What happens to me tomorrow depends on what I do today</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>If someone gets angry at me, it’s usually no fault of mine</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>It’s hard to believe people who say their work helps society</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>Ordinary work is just too boring to be worth doing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3
Thinking about your injury and how you’re reacting to it, please indicate the extent to which the following statements apply to you by circling one number from the response choices listed. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU.

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>1: I am not doing this at all</th>
<th>2: I am doing this a little bit</th>
<th>3: I am doing this a medium amount</th>
<th>4: I am doing this a lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am trying to grow as a person as a result of the experience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I am turning to work or other substitute activities to take my mind off things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I am getting upset and letting my emotions out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>I am trying to get advice from someone about what to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>I am concentrating my efforts on doing something about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>I am saying to myself “this isn’t real”</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>I am putting my trust in God</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>I am laughing about the situation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>I am admitting to myself that I can’t deal with it, and quit trying</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>I am restraining myself from doing anything too quickly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>I am discussing my feelings with someone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>I am using alcohol or drugs to make myself feel better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>I am getting used to the idea that it happened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>I am talking to someone to find out more about the situation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>I am keeping myself from getting distracted by other thoughts or activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>I am daydreaming about things other than this</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>I am getting upset, and am really aware of it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>I am seeking God’s help</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>I am making a plan of action</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>I am making jokes about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21</td>
<td>I am accepting that this has happened and that it can’t be changed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>I am holding off doing anything about it until the situation permits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>I am giving emotional support to friends or relatives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>I am giving up trying to reach my goal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>I am taking additional action to try to get rid of the problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26.</td>
<td>I am trying to lose myself for a while by drinking alcohol or taking drugs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>I am refusing to believe that it has happened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>I am letting my feelings out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29.</td>
<td>I am trying to see it in a different light, to make it seem more positive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30.</td>
<td>I am talking to someone who could do something concrete about the problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31.</td>
<td>I am sleeping more than usual</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>I am trying to come up with a strategy about what to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33.</td>
<td>I am focusing on dealing with this problem, and if necessary letting other things slide a little</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>34.</td>
<td>I am getting sympathy and understanding from someone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35.</td>
<td>I am drinking alcohol or taking drugs, in order to think about it less</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36.</td>
<td>I am kidding around about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>37.</td>
<td>I am giving up the attempt to get what I want</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>38.</td>
<td>I am looking for something good in what is happening</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>39.</td>
<td>I am thinking about how I might best handle the problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>40.</td>
<td>I am pretending that it hasn't really happened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>41.</td>
<td>I am making sure not to make matters worse by acting too soon</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>42.</td>
<td>I am trying hard to prevent other things from interfering with my efforts at dealing with this</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>43.</td>
<td>I am accepting the reality of the fact that it happened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>44.</td>
<td>I am asking people who have had similar experiences what they did</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>45.</td>
<td>I am feeling a lot of emotional distress and I find myself expressing those feelings a lot</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>46.</td>
<td>I am trying to find comfort in my religion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>49. I am forcing myself to wait for the right time to do something</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>50. I am making fun of the situation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>51. I am reducing the amount of effort I'm putting into solving the problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>52. I am talking to someone about how I feel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>53. I am using alcohol or drugs to help me get through it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>54. I am learning to live with it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>55. I am putting aside other activities in order to concentrate on this</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>56. I am thinking hard about what steps to take</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>57. I am acting as though it hasn't even happened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>58. I am doing what has to be done, one step at a time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>59. I am learning something from the experience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>60. I am praying more than usual</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4
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. Please make sure that you answer all questions and that you only circle one number per question – do not place a circle between any two numbers. There are no right or wrong answers, so please answer honestly. The information will be treated in strictest confidence.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am unable to enjoy myself</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. I experience feelings of jealously</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. I have difficulty accepting that I am injured</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. I feel dispirited</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. Team-mates seem to have lost interest in me</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. I am feeling mentally stronger</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. I feel isolated</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. I am devastated by the injury</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. I lack motivation</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. I am unable to relax</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. I feel a sense of apathy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12. I am unusually anxious</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13. I cannot work out why my injury happened</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14. My world has fallen apart</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15. Socially I feel like an outcast</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16. I have been cheated</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17. I am beginning to feel like myself again</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18. I feel uneasy</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19. I have much more confidence in myself</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20. I experience a feeling of emptiness</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. I get depressed about being injured</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. I don’t feel like mixing with other performers</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23. I feel as if I have been cheated by being injured</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
PREPARATION BOOKLET

The Aim of this Booklet is to Help You Prepare for your Interview

Please bring this booklet to your interview
INTRODUCTION

Dear Interviewee

First and foremost, I would like to thank-you once again for your participation in my first study. Just to remind you, the study involved completing a booklet of questionnaires, informing me of when you became injured by email, and then completing a number of on-line questions about your injury experience. However, although these findings have been of great help and interest, as I am sure you can appreciate, these results have only provided me with a general overview of the circumstances surrounding your injury.

... So where do we go next?

I am now keen to extend this research by gaining a more detailed insight into the factors that led up to your injury, and how you responded to its occurrence, the rehabilitation programme, and then your return into competitive sport. To generate this information I have developed an interview guide that includes a number of questions that relate to the circumstances surrounding your injury.

Please note the interview is ‘not’ intended as a test to catch you out in anyway, and nor should it be a worrisome experience for you. I am only interested in learning from ‘your’ experiences. You may even find that you too can take something away from going through this process, which ultimately could help your future sporting career.

The next page provides an overview of the interview guide
THE INTERVIEW

The interview guide

The interview guide is divided into four time phases: (1) pre-injury, (2) injury onset, (3) rehabilitation, and (4) return to competitive sport. The questions used within each section follow a similar theme. The questions generally focus upon:

1. Thoughts, emotions, and behaviours
   (e.g., “What thoughts ran through your mind during this phase”?)

2. Changes to normal functioning
   (e.g., “What things couldn’t you do as a result of your injury?”)

3. What you did in response to these changes
   (e.g., “Did you try and deal with them on your own or did you turn to others for help?”)

4. Practical recommendations for athletes
   (e.g., “What recommendations would you suggest from your injury experience?”)

… To help with your recall

The following pages provide you with a summary of your previous results, and a space where you can write down anything that will help with your recall during the interview. I really encourage you to review your results, as this will help the interview flow more smoothly and swiftly.

The next page provides an overview of your previous results
YOUR RESULTS

---

PRE-INJURY

Major life events

---

INJURY ONSET

Psychological responses

Coping strategies

---

REHABILITATION

Psychological responses

Coping strategies

---

RETURN TO COMPETITIVE SPORT

Psychological responses

Coping strategies

---

The next page provides some additional space for any notes
Appendix 6
First and foremost, thank you for agreeing to take part in this study. My name is Ross Wadey and I am currently undertaking a Ph.D. at the University of Wales Institute, Cardiff (UWIC). The aim of this interview is to gain an in-depth understanding of the circumstances surrounding your injury; in particular, the factors leading up to your injury and how you responded to its occurrence, the rehabilitation process, and your re-entry back into competitive sport. The information you provide during this interview will be used in my Ph.D. thesis and may also be published in scientific journals so that other athletes, coaches, and sporting personnel can benefit from your experiences. All your responses will remain anonymous and any information you provide will be stored in a secured area that is only accessible to me and my supervisory team. To ensure a complete and accurate account of this interview, I will be using a tape recorder throughout. Please do not be concerned if during the interview you see me jot anything down; any notes taken are solely to enable me to better understand your experiences and will also help form prompts later on during the interview.

Before starting the interview I would also like to confirm your right as a participant. This interview is about your experiences and as such if you feel uncomfortable about answering any of the questions then you are free to decline to comment or ask for the interview to be stopped. I would rather you declined to comment than answer in a manner that you think I or someone else would want to hear. Please take your time when responding to questions during the interview, pauses are fine. However, if you
still can not recall, please let me know and do not guess. There are no right or wrong answers to any of the questions. If you have any questions yourself please feel free to ask them at any point, especially if I ask something that is not clear. Finally, please remember that I am interested in gaining an overall understanding of the circumstances surrounding your injury; therefore, please do not hesitate to include anything that you believe had an impact on you during this time (such as family issues, relationships, examinations and so forth). Before we make a start do you have any questions?

SECTION 2: SPORTING INVOLVEMENT

Recorded

Okay, prior to exploring the circumstances surrounding your injury, in the first section of this interview I am interested in setting the scene by gaining an understanding of your involvement in sport and what role injury has played in your competitive career.

1. Okay, how long would you say you have been involved in competitive sport?

   Probe: Who got you involved in competitive sport?

   Probe: It seems that early on in your career you played many different sports?

   Probe: Can you tell me more about how you came to focus on your current sport?

2. Who do you currently compete for?

   Probe: How long have you competed for them?

   Probe: What is the highest level you have competed at in any sport?
3. What role has injury played in your sporting career so far?
Probe: What (if any) effect has this had upon you?
Probe: Do you have any strategies you use to prevent injury?

SECTION 3: PRE-INJURY
In this section I am interested in discussing the impact of the most significant major life events you experienced in the year prior to your injury. The questions in this section will help you to recall this information, so please do not be concerned if this is somewhat confusing at present. Please remember this interview is not intended as a test to catch you out in anyway. I am only interested in learning from your experiences. Okay, before we start please note that I am aware that some major life events can be extremely sensitive, so if you do feel uncomfortable recalling or talking about any events please let me know and we can move on. To help your recall I will address each major life event in turn, starting with the earliest event and ending with the most recent. Do you have questions before we start?

1. Okay, starting with the earliest major life event that happened to you during this 12 month period (i.e., the 12 months prior to your involvement in the study), can you describe what (if anything) led up to its occurrence?
Probe: It appears you were un/sure that the event would happen, can you elaborate?
Probe: It would seem that the occurrence of the event was in or outside your control?
Probe: Tell me about the thoughts that ran through your mind once it had occurred?
Probe: It seems you experienced few/many emotions, can you elaborate?
Probe: It appears these responses also influenced your actions?
Probe: What factors do you feel affected the way you responded? Why?
2. How did you initially deal with this event and the resultant T/E/B? (Sum up)

See preparation booklet

Probe: Then what did you do afterwards? And so on.

Probe: Did you receive anyone support during this time?

Probe: If so, who and was it helpful? If not, did you perceive support was available if needed?

Probe: Can you clarify the ordering of how you dealt with this event and resultant T/E/B?

Probe: How well equipped did you feel you were to deal with this event and resultant T/E/B?

Probe: Was much effort required to make these strategies effective?

Probe: Athletes deal with things in different ways, why did you deal with it in this way?

Probe: What effect (if any) did these mental and/or active steps have upon your T/E/B?

3. What feedback did you receive from your mental and/or active steps?

Probe: How do you feel you handled the event?

Probe: Did anyone make any comments to you or did you seek out any feedback?

Probe: It seems that you did (or did not) get your desired result, can you elaborate on this?

Probe: What effect did this feedback (sum up) have upon you?

4. Did you experience any unplanned setbacks as this event unfolded?
Probe: Can you tell me more about what actually happened and the effect on your T/E/B?

Probe: How did you respond to these changes?

Probe: Did you have to adjust the way you dealt with the situation?

5. What (if anything) did you gain from experiencing this major life event?

Probe: Can you tell me about any new insights about yourself, others, or life in general?

Probe: What (if any) opportunities came about from the events occurrence?

Probe: Were any personal relationships strengthened or weakened?

6. If you had to make practical recommendations for athletes who experienced a similar major life event to you, what advice would you suggest from your experience?

7. Okay, before we move on to the next major life event are there any other factors that you feel are relevant to this event that we have not discussed yet?

Next Major Life event

8. Do you feel any of these major life events could have led to your injury occurrence in anyway? How?

See preparation booklet
9. Were there any other major life events that happened to you between completing the questionnaire and your injury occurrence that we haven’t talked about yet?

SECTION 3: INJURY ONSET

Need to work out time scale ……… until ………

This section of the interview addresses the onset of your injury until you started your rehabilitation (i.e., initial physiotherapy appointment). It is extremely important that you think back to what you actually thought, felt and did back then. Sometimes athletes do not want to admit that their injury was particularly traumatic, as they believe this to be undesirable. However, this is common, and in order for me to fully understand your injury experience it would be helpful if you could share your true thoughts with me. Please, if you can’t remember, just let me know and we can move on.

1. Okay, can you firstly tell me what happened when you become injured?

Probe: Was it a demanding training session/competition?

Probe: What factors that you think contributed to your injury?

Probe: Were any previous injuries still affecting you at this time? How?

See preparation booklet

Probe: Type, location, and severity of your injury?

Probe: Was your injury diagnosed straight away?

2. How did you feel immediately after the occurrence of your injury?

See preparation booklet
Probe: What thoughts were running through your mind?

Probe: It seems you experienced few/many emotions, can you elaborate?

Probe: It appears these responses also influenced your behaviour, tell me more about this?

Probe: What factors do you feel affected the way you responded? Why?

Probe: Having been injured before (or not), how did this affect the way you reacted?

**See preparation booklet**

3. How did you initially deal with your injury occurrence and resultant T/E/B?

*(Sum up)*

**See preparation booklet**

Probe: Then what did you do afterwards? And so on.

Probe: Did you receive anyone support during this time?

Probe: If so, who and was it helpful? If not, did you perceive support was available if needed?

Probe: Can you clarify the ordering of how you dealt with your injury and resultant T/E/B?

Probe: How well equipped did you feel you were to deal with your injury and resultant T/E/B?

Probe: Was much effort required to make these strategies effective?

Probe: Athletes deal with things in different ways, why did you deal with it in this way?

Probe: What effect (if any) did these mental and/or active steps have upon your T/E/B?

**See preparation booklet**
4. What feedback did you receive from your mental and/or active steps?

Probe: How do you feel you handled your injury occurrence?

Probe: Did anyone make any comments to you or did you seek out any feedback?

Probe: What effect did this feedback (sum up) have upon you?

5. Did you experience any unplanned setbacks during this phase?

Probe: Can you tell me more about what actually happened and the effect on your T/E/B?

Probe: How did you respond to these changes?

Probe: Did you have to adjust the way you dealt with your injury occurrence?

6. What (if anything) did you gain from being injured during this stage?

Probe: Did it provide you with any new insights about yourself, others, or life in general?

Probe: How did it impact on other areas of your life? (e.g., personal relations)

Probe: Where there any other positive and/or negative consequences?

7. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you suggest during this phase from your experience?

8. Okay, before we move on to your rehabilitation is there anything important during this stage that we have not discussed?
SECTION 4: REHABILITATION PHASE

Need to work out time scale …….. until ……..

This section of the interview is concerned with your rehabilitation until your re-entry back into competitive sport. Please remember, there is no right or wrong answer to any of the questions. If you have any questions yourself please feel free to ask them at any point, especially if I ask something that is not clear.

1. Talk me through the start of your rehabilitation?
   
   Probe: Did you receive physiotherapy?
   
   Probe: How were your medical costs funded?
   
   Probe: Was the prognosis what you expected?
   
   Probe: What was the rehabilitation environment like?
   
   Probe: Who was involved in designing your programme?
   
   Probe: Did you understand everything that was required of you?

2. Can you describe your thoughts at the start of your rehabilitation?

   See preparation booklet

   Probe: Tell me about the type of emotions (if any) were you experiencing?
   
   Probe: It seems these responses also affected your behaviour, can you elaborate?
   
   Probe: What factors do you feel affected the way you responded? Why?

3. How did you initially deal with your rehab and the resultant T/E/B? (Sum up)

   See preparation booklet

   Probe: Then what did you do afterwards? And so on.
   
   Probe: Did you receive anyone support during this time?
Probe: If so, who and was it helpful? If not, did you perceive support was available if needed?

Probe: Can you clarify the ordering of how you dealt with your rehab and resultant T/E/B?

Probe: How well equipped did you feel you were to deal with your rehab and resultant T/E/B?

Probe: Was much effort required to make these strategies effective?

Probe: Athletes deal with things in different ways, why did you deal with it in this way?

Probe: What effect (if any) did these mental and/or active steps have upon your T/E/B?

See preparation booklet

4. What feedback did you receive from your mental and/or active steps?

Probe: How do you feel you handled your rehabilitation?

Probe: Did anyone make any comments to you or did you seek out any feedback throughout?

Probe: Did you feel you were you making good progress throughout your rehabilitation?

Probe: What effect did this feedback (sum up) have upon you?

See preparation booklet

5. Can you tell me how your rehabilitation programme changed with time?

Probe: Where there any barriers to your rehabilitation progress?
Probe: Can you tell me more about what actually happened and the effect on your T/E/B?

Probe: How did you respond to these changes?

Probe: Did you have to adjust the way you dealt with your rehabilitation?

6. Tell me about your level of adherence to your rehabilitation programme?

See preparation booklet

Probe: What factors do you think influenced your adherence to rehabilitation?

Probe: It seems you were unable to attend most sessions, can you elaborate?

Probe: Were you able to successfully perform the clinic and home-based activities?

7. Did you gain anything from being injured during this stage?

Probe: Did it provide you with any new insights about yourself, others, or life in general?

Probe: Were any personal relationships strengthened or weakened?

Probe: Where there any other positive and/or negative consequences?

8. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you suggest during this phase from your experience?

9. Okay, before we move on to your re-entry into competition sport is there anything important during this stage that we have not discussed?
SECTION 5: RE-ENTRY INTO COMPETITIVE SPORT

Need to work out time scale …….. until ……..

This section of the interview addresses your re-entry into competitive sport (i.e., full training and competition). Please remember that I am interested in gaining an overall understanding of your injury experience; therefore, please do not hesitate to include anything that you believe had an impact on you during this time (such as family issues, relationships, examinations and so forth).

1. How did your rehab change is the last few weeks prior to your re-entry into sport?
   Probe: What activities were you doing?
   Probe: Were you still receiving physiotherapy?
   Probe: How was it decided when you would return to competitive sport?
   Probe: Who made the decision about when you should return to full training and competition?
   Probe: Was this the originally targeted time-scale/date?

2. What (if any) medical recommendations were given to you prior to your return?
   Probe: Did you find it easy to adhere to these recommendations once you had returned?
   **See preparation booklet**
   Probe: Having been injured before (or not) did this affect how your level of adherence? Why?
   **See preparation booklet**
3. Can you describe the transition from rehabilitation to your return to sport?

See preparation booklet (i.e., reorganization and restlessness)

Probe: Tell me about the thoughts that were running through your mind on your return?

Probe: What type of emotions were you experiencing during this time?

Probe: Did the way you responded affect your ability to perform?

Probe: What factors do you feel affected the way you responded? Why?

4. How did you initially deal with your return to sport and the resultant T/E/B?

See preparation booklet

Probe: Then what did you do afterwards? And so on.

Probe: Did you receive anyone support during this time? (e.g., physio, coach, teammates)

Probe: If so, who and was it helpful? If not, did you perceive support was available if needed?

Probe: Can you clarify the ordering of how you dealt with your return and resultant T/E/B?

Probe: How well equipped did you feel you were to deal with your return and resultant T/E/B?

Probe: Was much effort required to make these strategies effective?

Probe: Athletes deal with things in different ways, why did you deal with it in this way?

Probe: What effect (if any) did these mental and/or active steps have upon your T/E/B?

See preparation booklet
5. What feedback did you receive from your mental and/or active steps?
Probe: How do you feel you handled your return to sport?
Probe: Did anyone make any comments to you or did you seek out any feedback?
Probe: It seems that you did (or did not) perform successfully as you would have liked? Probe: What effect did this feedback (sum up) have upon you?
See preparation booklet

6. What did you find difficult about re-entering competitive sport? Why?
Probe: Can you tell me more about what actually happened and the effect on your T/E/B?
Probe: How did you respond to these changes?
Probe: Did you adjust the way you dealt with your return to sport?

7. Did you gain anything from being injured during this stage?
Probe: Did it provide you with any new insights about yourself, others, or life in general?
Probe: Did the event strengthen or weaken any personal relationships?
Probe: Where there any other positive and/or negative consequences?

8. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you suggest for their return back to competitive sport?

9. Okay, before we move on to the final few questions of this interview is there anything important during this stage that we have not discussed so far?
SECTION 6: CONCLUSION

1. Okay, how did you feel the interview went?
2. Did you feel able to tell all that you wanted to?
3. Do you feel we missed any important areas you would like to discuss/add to?)?
Appendix 7
INTERVIEW GUIDE

SECTION 1: INTRODUCTION

Not recorded

First, and foremost, thank you for agreeing to take part in this study. My name is Ross Wadey and I am currently undertaking a PhD at the University of Wales Institute, Cardiff (UWIC). The aim of this interview is to gain an in-depth understanding of how you responded to your injury occurrence, the rehabilitation process, and your re-entry back into competitive sport. The information you provide during this interview will be used in my PhD thesis and may also be published in scientific journals so that other athletes, coaches, and sporting personnel can benefit from your experiences. All your responses will remain anonymous and any information you provide will be stored in a secured area that is only accessible to me and my supervisory team. To ensure a complete and accurate account of this interview, I will be using a tape recorder throughout. Please do not be concerned if during the interview you see me jot anything down; any notes taken are solely to enable me to better understand your experiences and will also help form prompts later on during the interview.

Before starting the interview I would also like to confirm your right as a participant. This interview is about your experiences and as such if you feel uncomfortable about answering any of the questions then you are free to decline to comment or ask for the interview to be stopped. I would rather you declined to comment than answer in a manner that you think I or someone else would want to hear. Please take your time when responding to questions during the interview, pauses are fine. However, if you still cannot recall, please let me know and do not guess. There are no right or wrong
answers to any of the questions. If you have any questions yourself please feel free to ask them at any point, especially if I ask something that is not clear. Finally, please remember that I am interested in gaining an overall understanding of the circumstances surrounding your injury; therefore, please do not hesitate to include anything that you believe had an impact on you during this time (such as family issues, relationships, examinations and so forth). Before we make a start do you have any questions?

SECTION 2: INJURY ONSET

Recorded

This section of the interview addresses the onset of your injury until you started your rehabilitation (i.e., initial physiotherapy appointment). It is extremely important that you think back to what you actually thought, felt and did back then. Sometimes athletes do not want to admit that their injury was particularly traumatic, as they believe this to be undesirable. However, this is common, and in order for me to fully understand your injury experience it would be helpful if you could share your true thoughts with me. Please, if you can’t remember, just let me know and we can move on.

1. Okay, let’s discuss when you became injured – talk me through it again?

Probe: Was it a demanding / important game?

Probe: Type, location, and severity of your injury?

Probe: What factors do you think contributed to your injury?
2. Remind me of the thoughts that were running through your mind at injury onset?

Probe: How did these thoughts make you feel?

Probe: Did these thoughts and feelings influence your actions?

Probe: Why did you respond in that way?

3. Where there any negative consequences of being injured during this phase?

Probe: Can you tell me more about how your injury impacted on other areas of your life?

Probe: Where there any positive consequences?

Probe: How did you respond to these consequences?

4. What do you think helped you deal with this phase of your injury?

Probe: Did you receive any support during this time?

Probe: What effect, if any, did attending the team sessions have upon you?

Probe: Did it help that you already had an understanding of your injury?

Probe: Did you use any other strategies to help you during this phase?

Probe: What effect, if any, did these strategies have on the way you responded?

5. What (if anything) did you gain or learn from being injured during this stage?

6. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you recommend for this phase of their recovery?
7. Okay, before we move on to your rehabilitation is there anything important during this stage that we have not discussed?

SECTION 3: REHABILITATION PHASE

This section of the interview is concerned with your rehabilitation until your re-entry back into competitive sport. Please remember, there is no right or wrong answer to any of the questions. If you have any questions yourself please feel free to ask them at any point, especially if I ask something that is not clear.

1. Let’s go over your rehabilitation – remind me again of what you did at the start?
   Probe: What rehabilitation exercises were you given and/or did you use and how did these change over time?
   Probe: What are the specific movements involved?

2. Can you describe your thoughts in terms of your injury/rehabilitation at this stage?
   Probe: How did these thoughts make you feel?
   Probe: What factors do you feel affected the way you responded during your rehabilitation?
   Probe: Did you put in place any strategies to help you deal with your responses?

3. What strategies helped you to deal with your rehabilitation?
   Probe: Did you receive any support during this time? (e.g., friends and family)
   Probe: What effect, if any, did this / these strategies have?
4. What indicators did you use to inform you how your injury was progressing?
Probe: What effect did these indictors have upon you?
Probe: Where there any barriers to your rehabilitation progress?
Probe: How did you respond to these changes?

5. How do you feel the physiotherapy session went?
Probe: What, if any, effect did this session have?

6. Where there any other negative consequences of being injured during this phase?
Probe: Can you tell me more about how your injury impacted on other areas of your life?
Probe: Where there any positive consequences during this phase?
Probe: How did you respond to these consequences?
Probe: What factors, if any, helped you to handle these consequences?

7. Did you gain or learn anything from being injured during this stage?

8. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you recommend for this phase of their recovery?

9. Okay, before we move on to your re-entry into competition sport is there anything important during this stage that we have not discussed?
SECTION 5: RETURN TO COMPETITIVE FOOTBALL

This section of the interview addresses your re-entry into competitive sport (i.e., full training and competition). Please remember that I am interested in gaining an overall understanding of your injury experience; therefore, please do not hesitate to include anything that you believe had an impact on you during this time (such as family issues, relationships, examinations and so forth).

1. How did your rehab change in the last few weeks prior to your re-entry into sport?
   Probe: What activities were you doing?
   Probe: How was it decided when you would return to competitive sport?
   Probe: Was this the originally targeted time-scale/date?

2. Can you describe the transition from rehabilitation to your return to training?
   Probe: Tell me about the thoughts that were running through your mind on your training?
   Probe: How did this make you feel during this time?
   Probe: Did the way you responded affect your ability to perform?
   Probe: What factors do you feel affected the way you responded? Why?

3. Can you tell me about your first game back?

4. What factors in particular helped you deal with your return to sport?
   Probe: Did you receive any support during this time?
Probe: What were the positive aspects of returning to sport?

Probe: Were you able to reflect on your levels of adherence during your rehabilitation?

Probe: What effect, if any, did these strategies have?

5. What did you find difficult about re-entering competitive sport? Why?

Probe: What effect, if any, did they have?

Probe: How did you deal with these?

6. Did you gain or learn anything from being injured during this stage?

7. If you had to make practical recommendations for athletes recovering from a similar injury to yours, what would you suggest for their return back to competitive sport?

8. Okay, before we move on to the final few questions of this interview is there anything important during this stage that we have not discussed so far?

SECTION 6: CONCLUSION

1. What effect, if any, did completing the diary have? (e.g., reflection)

2. Okay, how did you feel the interview went?

3. Did you feel able to tell all that you wanted to?

4. Do you feel we missed any important areas you would like to discuss/add to)?