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**PREDICTING RE-INJURY ANXIETY: THE ROLE OF
SOURCES OF CONFIDENCE**

(Dissertation submitted under the PSYCHOLOGY area)

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Predicting Re-Injury Anxiety: The Role of Sources of Confidence

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TABLE OF CONTENTS

Table of Contents

ACKNOWLEDGEMENTS	i
ABSTRACT	ii
1.0. Introduction	2
2.0. Literature Review	4
2.1. Introduction	4
2.2. Injury in Sport	4
2.3. Psychological Responses to Injury	5
2.4. Conceptual Models of Psychological Responses to Injury	6
2.5. Self-Efficacy and Self-Confidence	9
2.6. Sources of Self-Confidence	10
2.7. Self-Confidence and Injury	13
2.8. Self-Confidence and Re-Injury Anxiety	15
2.9. Rationale	16
3.0. Methodology	18
3.1. Research Design	18
3.2. Participants	18
3.3. Measures	19
3.3.1. Sources of Sports Confidence	19
3.3.2. Re-injury Anxiety	20
3.4. Procedures	20
3.5. Data Analysis	21
4.0. Results	23
4.1. Introduction	23
4.2. M-SSCQ Scale Reliability	23
4.3. RIAI Scale Reliability	24
4.4. Underlying Assumptions	25
4.5. Multiple Regression Analysis	25
4.5.1. Rehabilitation Re-Injury Anxiety	28
4.5.2. Re-Entry Re-Injury Anxiety	29

5.0. Discussion	31
5.1. Introduction	31
5.2. Sources of Confidence and Re-Injury Anxiety	31
5.3. Strengths and Limitations	37
5.4. Practical Implications	38
5.5. Recommendations for Future Research	39
6.0. Conclusion	42
Reference List	44
APPENDIX A	A1
APPENDIX B	B1
APPENDIX C	C1
APPENDIX D	D1
APPENDIX E	E1

LIST OF TABLES

TABLE 1

The Original and Final Cronbach Alphas for the M-SSCQ Sub-Scales

TABLE 2

The Cronbach Alphas for the RIAI Sub-Scales

TABLE 3

M-SSCQ Sub-Scale Descriptive Statistics

TABLE 4

Summary of Multiple Regression Analysis for Re-Injury Anxiety Sub-Scales

TABLE 5

ANOVA Results for Re-Injury Anxiety Sub-Scales

TABLE 6

Coefficients Summary of Multiple Regression Analysis for Intensity and Frequency of Re-Injury Anxiety in the Rehabilitation Phase

TABLE 7

Coefficients Summary of Multiple Regression Analysis for Intensity and Frequency of Re-Injury Anxiety in the Re-Entry Phase

LIST OF FIGURES

Figure 1

Adapted Version of The Integrated Model of Psychological Response to Sport Injury
(Weise-Bjornstal *et al.*, 1998)

Figure 2

Vealey's (2001) Reconceptualised Model of Sport-Confidence

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ABSTRACT

The aim of the current study was to explore the effects of sources of sport-confidence on the prediction of re-injury anxiety in injured athletes. Participants (n = 39) consisted of athletes from various different sporting backgrounds who had sustained a sporting injury within the last six months with at least two weeks' rehabilitation. This led them to complete the Modified Sources of Sport Confidence Questionnaire (M-SSCQ; Magyar & Duda, 2000) and the Re-Injury Anxiety Inventory (RIAI; Walker, Thatcher & Lavellee, 2010). A simple multiple regression analysis was carried out to explore whether the predictor variable (sources of confidence) had any significant relationship with the outcome variable (re-injury anxiety intensity and frequency) in the rehabilitation and re-entry to competition phases. The results of the multiple regression analysis showed insignificance ($p > .05$) between all nine sources of confidence and re-injury anxiety. These findings question the ability of sources of sport confidence to predict re-injury anxiety. However, previous research somewhat supports the findings. Future research involving qualitative and quantitative data collection should be carried out to further explore the findings and investigate any other potential predictors of re-injury anxiety.

CHAPTER ONE

INTRODUCTION

1.0. Introduction

The physically challenging and risky nature of sport makes it almost certain that an athlete will have to endure the consequences of injury at some point during their career (Tracey, 2003). For many, the injury process can be a traumatic experience with vast amounts of psychological challenges and consequences (Podlog & Eklund, 2010). Therefore, it is not surprising that recent literature has channelled its focus towards the psychological responses and social impacts of injury (Podlog & Eklund, 2006). Research has previously explored the psychological and social variables that can influence the three stages of injury; onset, rehabilitation and return to competitive sport (Hayes *et al.*, 2007; Podlog & Eklund, 2010; Magya & Duda, 2000). Re-injury anxiety has been recorded as one of the greatest threats to an athlete's performance as it can cause psychological decrements such as reduced self-confidence (Podlog & Eklund, 2006). However, despite the potentially hindering effects of re-injury anxiety, there has been minimal research focusing on methods to help reduce it during the return to sport from injury. More recently, literature has identified self-confidence as a facilitative psychological tool which can act as a buffer on re-injury anxiety (Wadey & Evans, 2011; Walker *et al.*, 2004).

For an athlete, self-confidence is thought to play a vital role during rehabilitation and return to sport, somewhat due to the positive effects it can have on re-injury anxiety. Vealey *et al.*, (1998) recognised the influential role of self-confidence and how it can reduce the risk of injury occurrence. Research suggests each individual athlete derives their confidence from specific sources (Bandura, 1982), therefore certain sources may be more significant than others when trying to reduce anxiety. However, the relationship between sources of confidence and re-injury anxiety needs further attention to confirm any current assumptions.

Therefore, the purpose of this study was to explore the gaps in literary knowledge surrounding the relationship between sources of sport confidence and re-injury anxiety. Thirty-nine recently/currently injured athletes completed the Modified Sources of Sport Confidence Questionnaire (M-SSCQ; Magya & Duda, 2000) and the Re-Injury Anxiety Inventory (RIAI; Walker *et al.*, 2010). The collected data was analysed using simple multiple regression to determine whether any sources of sport-confidence could predict the frequency and intensity of re-injury anxiety in injured athletes.

CHAPTER TWO
LITERATURE REVIEW

2.0. Literature Review

2.1. Introduction

This chapter outlines and draws upon existing sports-confidence and re-injury anxiety knowledge and explores the effects these variables could have on an athlete post-injury. The review will explain research around injury in sport and the psychological effects that injury can have on athletes during the onset, rehabilitation and return to sport stages. Sources of sport confidence and re-injury anxiety will be discussed in conjunction to injury to identify any influence they may have on an injured athlete with reference to academic literature. Finally, the chapter concludes with a rationale for the study where reasons will be provided to outline the importance of the issue.

2.2. Injury in Sport

Competitive athletes often have to cope with the challenges of dealing with, and returning from, a sports injury at some point during their career (Podlog & Eklund, 2006). When injury occurs, attention is primarily focused towards the physical and medical side of the episode and concern for the psychological impact can be overlooked (Tracey, 2003; Clement *et al.*, 2015). However, recently there has been increasing amounts of literature exploring the role of psychological factors on the injured athlete and how they affect the return to competitive sport (Podlog *et al.*, 2011; Brewer, 2007). Wadey and Evans (2011) identified the three stages of injury; onset of injury, rehabilitation and return to sport. Throughout these stages, athletes are forced to deal with unfamiliar demands including periods of uncertainty, stress and frustration (Kolt, 2000), These demands can increase the negative impact that injury can have on an athlete's life as they know it (Kvist *et al.*, 2005). A loss of confidence and heightened levels of re-injury anxiety have been associated with the most prevalent demands that athletes face during the return to competitive sport (Podlog & Eklund, 2006). Therefore, the restoration of confidence is essential as it is one of the most influential psychological factors when returning to sport (Magyar & Duda, 2000). However, there is limited research exploring whether sources of sport confidence can act as predictors for levels of re-injury anxiety.

2.3. Psychological Responses to Injury

“Serious injury is one of the most emotionally and psychologically traumatic things that can happen to an athlete” (Heil, 1993, pp. 18). When considering the social construct, ‘psychological’ can be defined as the thoughts, feelings and behaviours felt by an individual in a certain situation (Russell & Weise-Bjornstal, 2015).

When faced with injury, athletes have to deal with a vast number of psychological responses and stressors from the onset (Russel & Wiese-Bjornstal, 2015; Wiese-Bjornstal *et al.*, 1998). Leddy *et al.* (1994) reported that among the responses, athlete’s faced mood disturbances and changes in emotion. Feelings of anxiety, fear, anger and confusion were amongst the identified mood disturbances. Throughout the injury process as a whole, Wadey and Evans (2011) highlighted that the emotions felt by athletes changed over time, following a temporal pattern specifically during the rehabilitation stage.

The first recognised stage of the injury process is the onset of injury, whereby the initial episode of injury occurs and forces the athlete to deal with sudden negative appraisals surrounding the event (Clement *et al.*, 2015). During this time, athletes will experience various cognitive, emotional and behavioural responses (Carson & Polman, 2008; Wiese-Bjornstal *et al.*, 1998). Research suggests that during this phase, it is common for athletes to experience emotional turmoil, loss of functional ability, a lack of understanding of the injury itself and the recovery process (Cement *et al.*, 2015). Due to the injury onset being a time of confusion and lack of understanding, athletes are more likely to experience some of the most intense emotions (Wadey & Evans, 2011).

As soon as the injury has been treated, the athlete enters the rehabilitation phase. This stage sees the beginning of recovery where the athlete is most likely to experience isolation and loss of identity (Cecil *et al.*, 2009). Feelings of disconnection are likely due to the absence from their teammates and coaches through not being able to train and compete (Cecil *et al.*, 2009; Kolt, 2000; Podlog & Eklund 2010). Subsequently, disruption of training alone can cause symptoms such as depression, low self-esteem and anxiety (Russell & Wiese-Bjornstal, 2015). Athletes will commonly have to deal with stressors such as physical incapacitation, slowness of progression and setbacks, and the monotony of rehabilitation sessions (Evans *et al.*, 2000, Podlog & Eklund, 2007).

Return to competitive sport is the final phase of the injury process. Here athletes will be required to deal with many stressors and demands which are often complex and can vary significantly over the duration of their return (Andersen, 2001; Evans *et al.*, 2000, Podlog & Eklund, 2005, 2006, 2007, 2009, 2010). Demands during this stage can be categorised under three main themes: re-injury anxiety; the decision to return to sport; and returning to pre-injury levels of performance. Lack of confidence in the injured body part, discomfort and pain and restricted levels of physical activity were among the stressors athletes faced which effect levels of re-injury anxiety (Bianco *et al.*, 1999; Podlog & Eklund 2006, 2007, 2010). In McGowan *et al.*'s (1994) study examining injured footballers, injured players were found to have lower levels of self worth than their non-injured counterparts. These findings can have a negative effect on confidence leading to poor post-injury performance (Arvinen-Barrow & Walker, 2013).

It is recognised that the physiological and psychological factors contributing to an athlete's readiness to return to sport usually develop at different rates throughout injury (Evans *et al.*, 2000, Podlog & Eklund, 2006, 2007). Coaches and medical professionals need to be aware of the factors affecting psychological readiness which can include physical self-presentation, returning to pre-injury levels of performance, re-injury anxiety and inadequate levels social support (Podlog & Eklund 2007). It is common for athletes to place pressures on themselves by attempting to fulfil unrealistic expectations of returning to pre-injury standard of performance (Podlog & Eklund, 2009; Taylor & Taylor, 1997). which can be detrimental to a successful return to sport (Podlog & Eklund, 2007; Johnston & Carroll, 1998). Despite a broad range of research surrounding the psychology of sporting injury and its effects upon an athletes' success during their return to sport, there has been little focus on the role of self confidence when considering re-injury anxiety.

2.4. Conceptual Models of Psychological Responses to Injury

Several models have been offered in an attempt to explain an athlete's psychological responses to injury. Heil's (1993) five stage grief model was adapted from Kubler-Ross' (1969) generalised grief model for a more sport specific outline of the phases of response to injury. Evans and Hardy (1995) suggested that the grief model should be conceptualised as a circular construct rather than linear to adapt to the changing nature of events. Similarly, Taylor and Taylor's (1997) five stages of return to sport model takes a linear approach, therefore fails to account for the dynamic experiences athletes may face (e.g. set-backs in rehabilitation). Following these suggestions, both Brewer *et al.*'s (2002) biopsychosocial

model and Wiese-Bjornstal *et al.*'s (1998) Model of Response to Sport Injury offer a bi-directional approach to allow for the varied experiences of each individual in response to injury. Wiese-Bjornstal *et al.*'s (1988) Model of Response to Sport Injury (see Figure 1) has received most support from other literature, which can be underpinned by Lazarus and Folkman's (1984) cognitive appraisal theory of stress and coping. The stress-process model considers how the athlete's response to injury is influenced by the pre and post injury factors (Evans *et al.*, 2006). Pre injury factors include personality (e.g., hardiness and optimism), history of stressors (e.g., major life events and daily hassles) and coping resources (e.g., coping strategies and psychological skills). Post injury factors are the personal (e.g., injury severity, self-motivation, age) and situational variables (e.g., type of sport, level of competition, rehabilitation environment) that effect the response and appraisal of injury (Evans *et al.*, 2006). The model suggests that the pre-injury and post-injury factors can act as predictors of the cognitive, behavioural and emotional responses faced which can ultimately affect the recovery outcomes (Brewer, 1994; Mankad *et al.*, 2009; Wadey *et al.*, 2011). The severity of the variables and how they interact with the personal and situational factors are determined by the athlete's appraisal (Evans *et al.*, 2006).

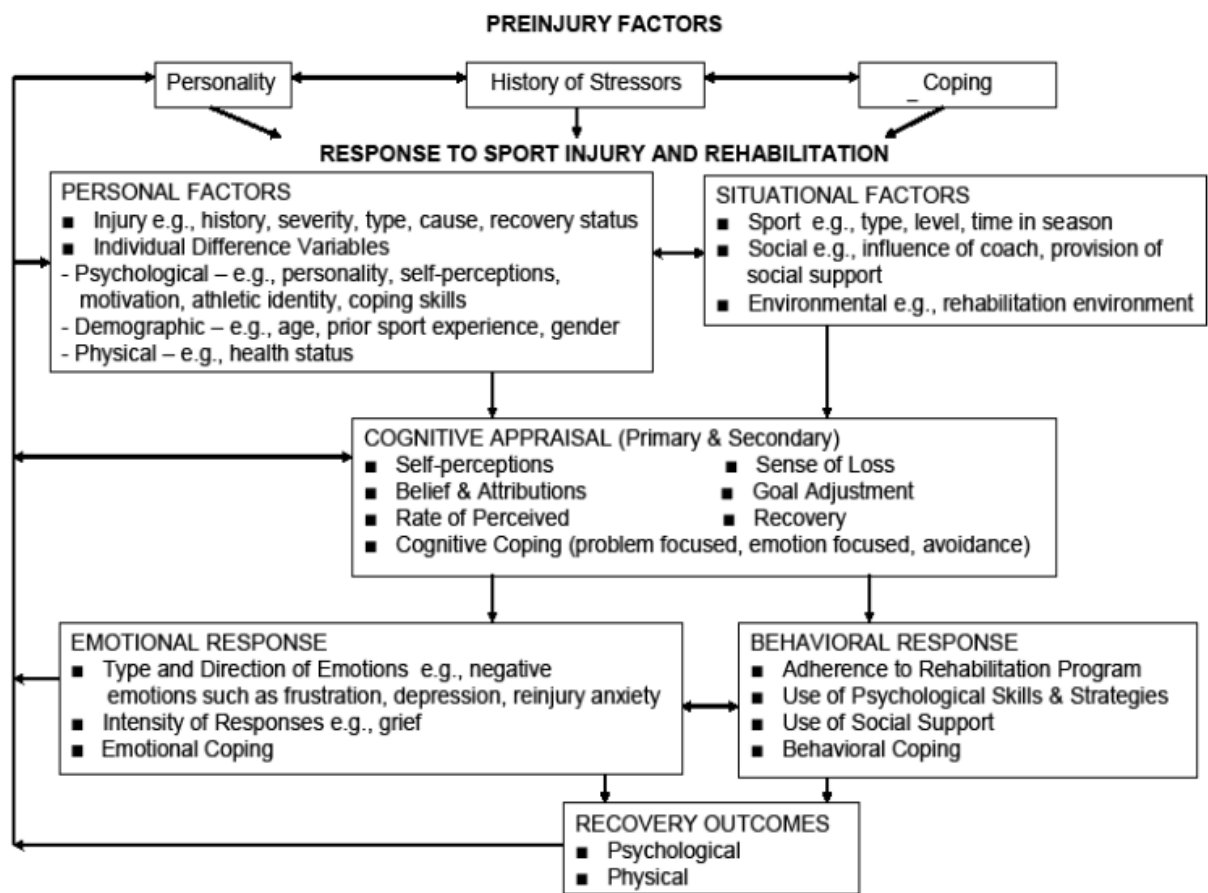


Figure 1. Adapted version of The Integrated Model of Response to Sport Injury (Weise-Bjornstal *et al.*, 1988)

There are a number of studies alongside Wiese-Bjornstal *et al.*'s (1988) which recognise the temporal changes in athlete's emotional responses during the injury process. During the injury onset it is suggested that there is a significant decrease in self-confidence, which then rises once the athlete has returned to sport and the recovery is complete (Quinn & Fallon, 1999; Podlog & Eklund, 2006). Clement *et al.* (2015) also identifies the negative effects sporting injury can have on an athlete, especially in the return to sport phase. These findings indicate the importance of rebuilding confidence during the return to sport, therefore implementing strategies throughout the stages of injury recovery is imperative.

2.5. Self-Efficacy and Self-Confidence

Bandura's (1982) theory of self-efficacy referred to a situational-specific self belief in one's ability to organise and carry out action required for performance. However, the original theory was not intended to be used within in a sporting context (Thomas *et al.*, 2011). Bandura (1982) suggested that self-efficacy can be derived from self-appraisal and self-persuasion, identifying four main sources of information; verbal persuasion, vicarious experiences, performance accomplishments and emotional arousal (Bandura, 1982). Research has suggested all of Bandura's sources can facilitate confidence and efficacy beliefs, with performance accomplishments being one of the heaviest predictors (Feltz *et al.*, 1979; Magyar & Duda, 2000; Feltz, 2007). McCauley and Blissmer (2000) identified performance accomplishments as a key source for enhancing self-efficacy as well as level of performance (McCauley, 1993). However, limitations of Bandura's theory were highlighted due to it's non sport-specific nature, questioning the sources validity when employing them within a sporting context. Additionally, the four sources were further criticised for being too broad (Carmack, 1979; Hays *et al.*, 2007; Kingston *et al.*, 2010).

Following these criticisms, Vealey *et al.* (1986) proposed the first sport-specific framework for confidence which could be used in a competitive sporting environment. The newly conceptualised model, unlike Bandura's (1982) generalised Self-efficacy model, identified sport-confidence as an individual's belief that they will be successful performing in a specific sporting situation (Vealey, 1986; Vealey & Chase, 2008). Vealey's (1986) model was conceptualised into SC-trait (general perceived ability of success) and SC-state (the perceived ability of success in a given situation at a given time) in conjunction with the construct of competitive orientation (an athlete being determined to achieve a certain type of goal whilst competing in sport; Vealey *et al.*, 1998). The two goals Vealey used to represent the developing competitive orientations were outcome orientations and

performance orientations. The model predicted that SC-trait would impact SC-state by interacting with the competitive orientations. There were, however, limitations within Vealey's (1986) sport-confidence model.

Vealey (1998) defined self-confidence as the belief one's self has in the ability to carry out a certain task based on the tools and skills they possess (Vealey *et al.*, 1998; Vealey & Chase, 2008). Psychologists believe confidence to be one of the most important characteristics influencing successful sports performance (Vealey *et al.*, 1998) and suggest that as confidence increases, so will the level of performance. Due to the unstable nature of self-confidence, it is a construct that continues to attract attention from researchers as it can have great affect upon sporting performance (Vealey, 2001; Magyar & Duda, 2000). The effects of such an unpredictable and changing construct can lead an athlete to experience a 'slump' (a period of time where confidence is low) and/or 'choke' (the dramatic drop in performance due to low confidence) (Magyar & Duda, 2000). Podlog and Eklund (2006) identified that athletes were more likely to adhere to their rehabilitation programme and generally have better rehabilitation outcomes when levels of confidence were high. Having a lack of confidence could result in negative and undesirable behavior led by feelings of depression, anxiety and worry (Vealey, 1986). However, Limitations within Vealey's (1986) model were further identified, mainly recognising the lack of relationship found between SC-state and competitive orientation (Martin and Gill, 1991). Secondly, the model lacked specificity within sporting situations questioning the sub-scales validity. In addition to these limitations, the model did not take into account athlete's individual characteristics such as age, gender and sport which could affect the athlete's confidence beliefs.

2.6. Sources of Self-Confidence

Vealey *et al.* (1998) re-conceptualised the model of sport-confidence to provide a more advanced framework. This framework positioned sport-confidence as a single construct which included athlete's most significant sources of confidence. Sport-confidence was described as a multi-dimensional construct (Vealey, 2001; Vealey *et al.*, 1998) which enabled the previous (1986) model's failure to account for sources or determinants of confidence to be overcome (Vealey *et al.*, 1998). The newly conceptualised model (see figure 2) proposed that individual differences (e.g., personality) along with sociocultural forces and the organisation of sport are what shapes where an athlete derives their main confidence from (Vealey & Chase, 2008). Nine sources of confidence were identified under three broad domains: achievement (mastery, demonstration of ability), self-regulation

(physical self-presentation, mental/physical preparation) and social climate (social support, vicarious experience, leadership, environmental comfort, situational favourableness) (Vealey *et al.*, 1998; Wilson *et al.*, 2004; Hays *et al.*, 2007). Clear similarities can be found between Vealey's (1986; 1998; 2008) model and Bandura's (1987; 1994; 1997) Self-Efficacy theory, namely, both considered the social and cultural factors that play a role on athlete's beliefs of sport-confidence. Additionally, there was a reoccurrence of vicarious experience and mastery as important sources of confidence. Conversely, Vealey's model differed from Bandura's Self-Efficacy theory as it was more attuned to the competitiveness and training nature of sport (Magyar & Duda, 2000; Vealey *et al.*, 1998).

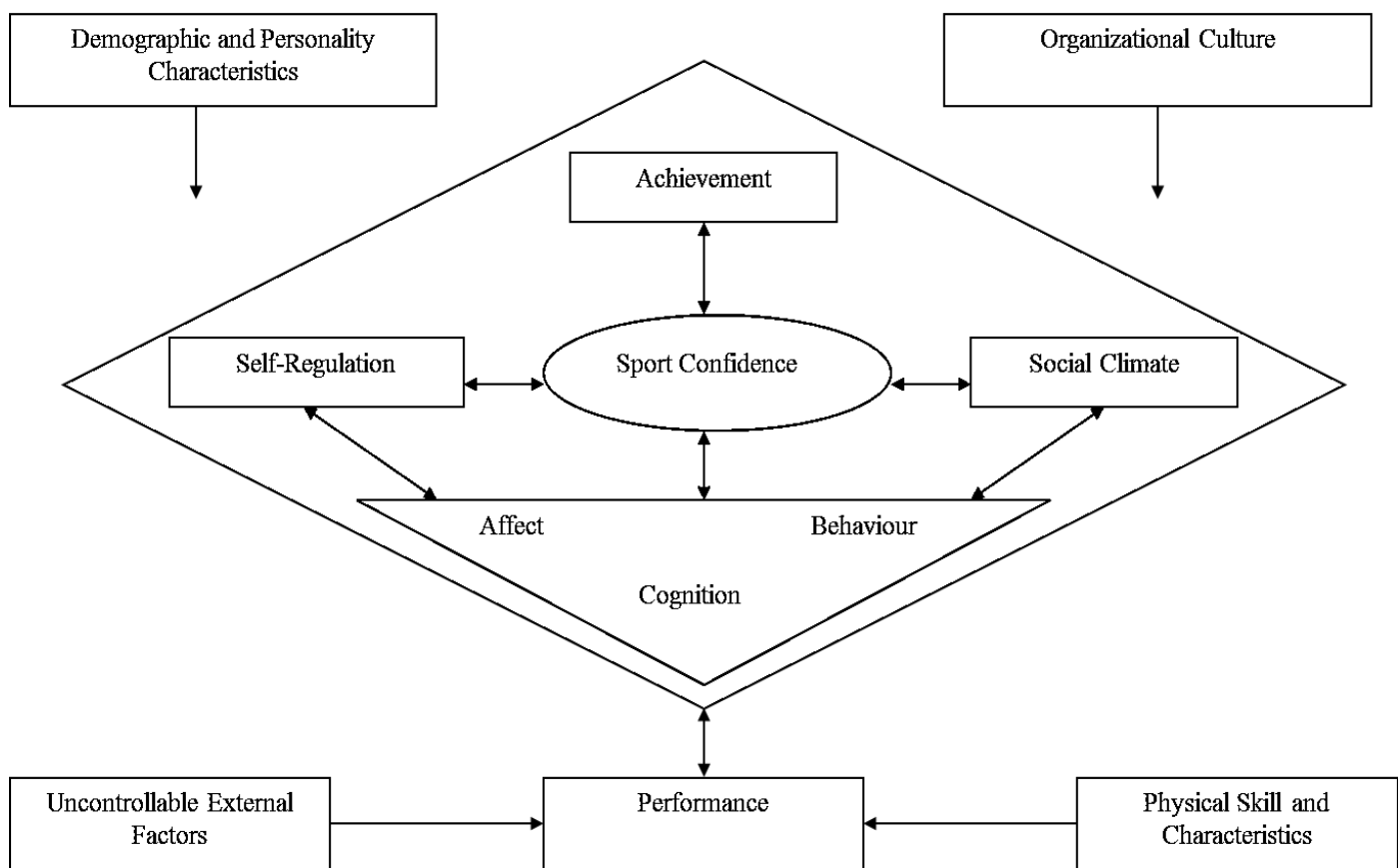


Figure 2. Vealey's (2001) Reconceptualised Model of Sport-Confidence

After initially identifying the nine sources of sport-confidence, Vealey *et al.* (1998) recognised physical and mental preparation, mastery, demonstration of ability, physical self-presentation and social support as the five most salient sources. Additionally, the model suggested deriving confidence from controllable sources (i.e. mastery, mental/physical preparation) which could result in greater positive outcomes. On the other hand, solely relying on uncontrollable sources (i.e. vicarious experience, physical self-presentation, situational favourableness) to gain confidence could lead to more unstable perceptions of sport-confidence (Vealey *et al.*, 1998; Kingston *et al.*, 2010). Variances between genders were identified with social support proving to be more influential for female than male athletes (Kingston *et al.*, 2010). This shows the prominence social evaluation has for females in comparison to males (Duda, 1989). Similarly, Hays *et al.* (2009) found that female athletes experienced a decline in confidence from uncontrollable, external factors which were associated with the organisational culture of the sport (e.g. competitive level, motivational climate).

Hays *et al.* (2007) supported Vealey's (2001) model by identifying the importance of nine sources of confidence amongst world class athletes. Performance accomplishments, social support, physical self-presentation and preparation were found to be the most salient sources within the study (Hays *et al.*, 2007). Furthermore, Hays *et al.* (2007) proposed differences in gender when considering the sources that athletes' utilised to gain confidence. Females were more reliant on a strong personal performance to increase confidence whereas males placed more importance on successful outcome in competition. The findings are consistent with literature surrounding the effects of gender on the prediction of self-confidence and are important as they provide greater understanding of confidence within a practical setting. Therefore, practitioners can apply this knowledge to facilitate athletes' confidence beliefs during their return to sport from injury.

2.7. Self-Confidence and Injury

When considering injury, confidence has been found to be one of the most important factors which can facilitate a timely recovery (Taylor & Taylor, 1997; Weise-Bjornstal *et al.*, 1998). The importance of maintaining sufficient levels self-confidence is well known, yet surprisingly, there is little research surrounding the role of confidence throughout injury. Therefore, it is important to explore the potential effects that sources of confidence can have on re-injury anxiety.

Previous research highlights the importance of restoring an athlete's confidence following athletic injury if the return to sport is to be successful (Taylor & Taylor, 1997). Bianco's (1999) study on elite skier's experiences of injury found that low levels of perceived confidence were due to high performance expectations but unsatisfactory results. Subsequently, Bianco (1999) recognised the importance of restoring confidence to comfort the athlete so they feel confident in their return to sport at an appropriate level of performance (Bandura, 1990). However, there is limited research exploring the role of confidence restoration on re-injury anxiety following athletic injury.

A key study surrounding the restoration of confidence following athletic injury was conducted by Magyar and Duda (2000). The importance of self-confidence was highlighted within the study, identifying the need for the restoration of confidence before an athlete returns to competitive involvement. Findings identified performance-related sources (i.e. demonstration of ability and mastery) as the most significant predictors of confidence within both rehabilitation and return to sport contexts. Athletes who had high perceptions of social support were found to utilise performance-related sources to aid confidence restoration during rehabilitation (Magyar & Duda, 2000). Furthermore, in the later stages of rehabilitation, confidence restoration was positively correlated with environmental comfort mastery, physical/mental preparation and social support. Finally, there was a constant positive relationship between performance-related sources and confidence restoration throughout rehabilitation (Magyar & Duda, 2000).

Following Magyar and Duda's (2000) research, Carson and Polman (2008) conducted a case study focusing on the rehabilitation experiences of a rugby union player post Anterior Cruciate Ligament (ACL) reconstruction. Findings acknowledged social support as the most significant source of confidence throughout the rehabilitation process. Recorded sources of social support included teammates, coaches and medical practitioners (Carson and Polman, 2008). The study suggested that athletes had more positive feelings towards the recovery process if they receive informational support from medical practitioners. Additionally, informational social support heightened the athlete's levels of confidence and reduced re-injury anxiety (Magyar & Duda, 2000; Carson & Polman, 2008; Wadey & Evans, 2011). Similarly, Evans *et al.* (2000) found social support to be one of the most salient sources for increasing self-confidence amongst rugby players during rehabilitation and return to sport. The recognition of these sources (Magyar & Duda, 2000; Evans *et al.*, 2000; Carson & Polman, 2008) provided practitioners, coaches and athletes with vital knowledge

surrounding the restoration of confidence which can be used to implement techniques and lead an athlete to a successful return to sport.

2.8. Self-Confidence and Re-Injury Anxiety

The fear of re-injury has been identified as one of the dominant emotions experienced by an athlete returning to sport (Andersen, 2001, Podlog & Eklund, 2005, 2006). Previous literature has recognised re-injury anxiety and self-confidence as essential predictors of a successful return to sport (Magyar & Duda, 2000). Hays (2009) suggested high levels of self-confidence can help to reduce levels of re-injury anxiety by helping to manage situations that are stressful for athletes. However, there are still gaps in literature exploring the role of self confidence on the prediction of re-injury anxiety.

According to literature, re-injury anxiety is the fear of an injury reoccurrence to the same body site and of the same nature as a previous injury (Walker *et al.*, 2010). Heil (1993) suggested that the fear injury is always present for athletes and can effect their psychological and physiological states considerably; potentially resulting in actual injury. Walker *et al.* (2004) supported these findings acknowledging that as the return to sport draws closer, re-injury anxiety increases and athletes experience feelings of stress, worry and doubt. In conjunction, Heil (1993) identified reduced confidence as a substantial psychological factor associated with the fear of injury. Although Heil (1993) presented this idea for the initial fear of injury, literature supported the process, acknowledging its ability to be applied to a re-injury context due to the presence of similar psychological decrements (i.e. lack of confidence) (Chase *et al.*, 2005; Taylor & Taylor, 1997).

During the athlete's transition back to competitive sport, relationships between athlete's levels of self-confidence and re-injury anxiety have been recognised. Feltz (2007) identified a relationship between high levels of confidence and low levels of re-injury anxiety. Conversely, when exploring elite skier's experiences of injury, Bianco *et al.* (1999) found low self-confidence to relate with high levels of re-injury anxiety. Similarly, when considering the effects of social support on athletes during rehabilitation, Johnston and Carroll (1998) found athletes had increased re-injury anxiety and decreased levels of self-confidence. Research carried out by Jones and Swain (1995) showed athlete's who had higher perceived levels of self-confidence were more likely to have positive feelings towards re-injury anxiety. This finding shows that self-confidence could act as a buffer on re-injury anxiety and suggests how emotions can be altered to positively effect sporting performance. Furthermore, Jones

and Hanton (2007) found that self-confidence can act as a moderator for feelings such as nerves or anxiety, and when self-confidence is high, emotions can be interpreted in a more positive way. Therefore, having a sound understanding of the relationship between sources of confidence and re-injury anxiety would provide coaches and athletes with the knowledge to apply strategies to aid a more successful return to sport.

2.9. Rationale

Previously, research has mainly focused on the sources of confidence and their relationship with self-confidence in sport. However, there has been little research exploring the impact that self-confidence can have on other psychological elements. Re-Injury anxiety has been recognised as having many negative effects upon sporting performance (Bianco, 1999; Podlog & Eklund, 2006), but little research has been carried out focusing on how athletes could implement strategies in order to manage re-injury anxiety and reduce its detrimental effects. Therefore, this study will aim to investigate the relationship between Vealey *et al.*'s (1998) sources of sport confidence and re-injury anxiety in injured athletes. Findings from the study will provide coaches, athletes and practitioners with essential knowledge and understanding which can be applied throughout the injury process to aid the athlete to a successful return to sport.

CHAPTER THREE

METHODOLOGY

3.0. Methodology

3.1. Research Design

This study used a quantitative approach to data collection as it enables statistical analysis of a large amount of collected information which can then be generalised to a wider population (Gratton & Jones, 2010). Questionnaires were the chosen method of data collection as they are effective when considerable amounts of structured data are being collected to be able to analyse particular statistical relationships (Thomas & Nelson, 2001). Results can then be generalised to a broader sporting population. The study was a prediction of the relationship between the independent variable (sources of sport confidence) and the dependent variable (levels of re-injury anxiety) during the stages of injury.

3.2. Participants

The participants used in this study were a purposeful sample (n= 39) who met the desired criteria. Participants were required to (a) have had a sporting injury occur whilst taking part in their main sporting activity, (b) currently have an injury or have returned to sport post injury in the past six months, (c) have been out of competitive sport for longer than two weeks due to the injury, and (d) played at a club level or higher standard of competition. The criteria were put in place to reduce the potential effects of memory decay, meaning there was a smaller chance of forgetability being an issue (Altmann & Gray, 2002). The participants consisted of male (n= 24) and female (n=15) athletes whose ages ranged from 18 to 28 (M = 20.87 years, SD = 2.54). A variety of team (n= 31) and individual (n= 8) sports were represented with performance levels ranging from club to international competition. Injury characteristics varied considerably from severe (i.e. broken bones, ruptured ACL), to mild (i.e. muscular strains and bruising) with the amount of time away from normal participation in sport ranging from 2 weeks to sporting retirement. The sample was sourced through a massage therapist, as well as a variety of university and semi-professional to professional sports teams.

3.3. Measures

3.3.1. Sources of Sports Confidence

Magyar and Duda's (2000) Modified Sources of Sports Confidence Questionnaire (M-SSCQ; see appendix D) was developed from Vealey et al.'s (1998) original to ensure the items were relevant to the injury/rehabilitation context. It was used to measure which sources the participants derive their self-confidence from throughout the injury process. The M-SSCQ comprised of 43 items, which are split into 9 subscales, each of which representing a different source of confidence: mastery (i.e., "improving performance on a new rehabilitation skill"), demonstration of ability ("proving that I am better than others in rehabilitation"), mental/physical preparation (i.e., "psyching myself up so I am ready for rehabilitation"), physical self-presentation (i.e., "feeling that I look the part"), social support (i.e., "receiving support and encouragement from friends and team mates"), vicarious experience (i.e., "watching a teammate perform a rehabilitation skill successfully"), environmental comfort (i.e., "liking the environment where I am performing"), situational favorableness (i.e., "the little things are going my way") and athletic trainer's leadership (i.e., "having faith in my trainer's abilities"). The questionnaire used a 7-point Likert scale ranging from 0 (not at all confident) to 7 (always confident), which was found by Krosnick & Fabrigar (1997) to be the optimum range for a rating scale. Participants had to respond to the statement "I usually gain/gained confidence in my rehabilitation programme from..." using the scale.

The modified version of the SSCQ was provided by Magyar and Duda (2000) to focus on the sources of sport confidence experienced within rehabilitation and return to sport contexts. Vealey et al. (1998) found the SSCQ to be a reliable and valid measure with the nine sources having an internal reliability score (Cronbach's alpha) ranging between 0.71 and 0.93. Field (2013) stated that any values outside of the range would not be accepted. In conjunction, quantitative research by Kingston *et al.* (2010) found acceptable reliability scores amongst all sub-scales ($\alpha = .75$ to $.98$). Conversely, research by Wilson *et al.* (2004) found inconsistencies with the internal reliability of the Situational Favorableness source of sport-confidence as it presented unacceptable Cronbach's alpha scores ($\alpha = < .7$). Furthermore, Magyar and Duda (2000) found unacceptable reliability scores in the sub-scales of environmental comfort, situational favourableness and athletic trainer's leadership. As a result of the inconsistencies found within previous research, the present study will test

the internal consistency of all sub-scales to ensure reliability when interpreting the sub-scales in analysis.

3.3.2. Re-injury Anxiety

The Re-Injury Anxiety Inventory (RIAI; see appendix E) was developed by Walker, Thatcher, and Lavalley (2010) to measure an athlete's levels of re-injury anxiety. Specifically, the 28 item RIAI focuses on the levels of re-injury anxiety that the athletes may experience during the rehabilitation (RIA-R) and return to sport stages (RIA-RE). The Re-Injury anxiety during rehabilitation was measured using 15 items, for example, "I am/was worried about becoming re-injured during rehabilitation". For the return to competitive sport, the Re-Injury Anxiety Inventory comprised of 13 items, for example, "I am/was worried about becoming re-injured during re-entry to competition". Cognitive and somatic symptoms were included in each factor due to injured athletes recorded experiences of both during injury (Walker, 2006). Cognitive items included: 'I am/was worried about becoming re-injured during rehabilitation'; 'I am/was worried about becoming re-injured during re-entry into competition' and somatic included: 'My body feels/felt tense about rehabilitation due to my re-injury worries'; 'My body feels/felt tense about re-entering competition because of my re-injury worries'.

There were two separate Likeart scales for athletes to indicate their intensity of each item. The RIAI intensity levels were collected on a Likert scale of 0 to 3 (0 = "not at all" and 3 = "very much so"). The re-injury anxiety frequency was measured on a 1-7 Likert scale (1 = never, 7 = all the time). Walker *et al.* (2010) examined the internal reliability for all factors of the RIAI using Cronbach's alpha. Walker *et al.* (2010) reported Cronbach's alpha scores of .98 (RIA-R) and .96 (RIA-RE). Prior to the main analysis, internal reliability coefficients of the RIAI scales will be calculated to ensure acceptable ($\alpha = >.7$) scores are reached.

3.4. Procedures

Following the acceptance of ethical approval, participants who met the specific criterion were approached and asked to take part in the study. All participants involved were assured that their part in this study was voluntary. An information sheet (see appendix A) was given to the participants outlining its aims and objectives and their role within the study, along with a consent form (see appendix B) which required completion prior to any information being gathered. Participants were given the opportunity to ask any questions they may have had about the questionnaires and were assured that they could withdraw from the study at any time without reason or consequence. The study involved the participants being asked to

complete a demographic information sheet (see appendix C), the Modified Sources of Sport confidence questionnaire (M-SSCQ) (Vealey et al., 1998) and the Re-Injury Anxiety Inventory (RIAI) (Walker et al., 2010) to the best of their ability, with emphasis on there being no right or wrong answer to each question. The questionnaire was uploaded to Survey Monkey as the main method of data collection. Emails were sent to both the men and women's hockey teams at Cardiff Metropolitan University and a number of club level Hockey teams which outlined the criterion that had to be met and included the link of the online questionnaire. Additionally, a small number of the questionnaires were handed out to individuals from a sports massage practitioner.

3.5. Data Analysis

Before the main analysis was carried out, internal reliability coefficients (Cronbach Alpha) were calculated to examine the internal reliability of the nine sub scales of the M-SSCQ and the four sub scales of the RIAI (cf. Field, 2009). Sub-scales that reached Cronbach's Alpha values of 0.7 or above were accepted as having internal reliability. Values below 0.7 were examined to identify whether they influenced the overall reliability of a sub-scale. If an item within a sub-scale was found to have a considerable effect on the reliability, it would be discarded to improve the internal reliability as a whole. To check the overall reliability had not been compromised, a Cronbach Alpha test was recalculated once items had been removed. If acceptable levels were not reached prior to the removal of an item, the whole sub-scale would be removed from the study.

The data was imported into SPSS 20.0 and analysed using multiple regression analysis. This will be used to determine if there are any sources of confidence which can predict intensity and frequency of re-injury anxiety during rehabilitation and return to sport. Previous research expressed regression analysis the most efficient method of examining the relationship between several independent variables (sources of sport-confidence) and one dependent variable (re-injury anxiety) (Field, 2009). For significant differences to be recognised, a 'p' value less than 0.05 ($p < 0.05$) was implemented.

CHAPTER FOUR

RESULTS

4.0. Results

4.1. Introduction

This section begins by summarising the results for the internal reliability of the sub-scales of the M-SSCQ and RIAI. Next, underlying assumptions were confirmed followed by the presentation of the results of the main multiple regression analysis.

4.2. M-SSCQ Scale Reliability

The original and final internal reliability scores for the M-SSCQ sub-scales were calculated using Cronbach alpha's (α) and are presented in Table 1. Acceptable reliability scores were reached on all subscales between .72 and .94 with the exception of Environmental Comfort ($\alpha = .57$) and Situational Favorableness ($\alpha = .66$). Following the initial reliability testing, one item from both the Environmental Comfort and Situational Favourableness sub-scales was removed to improve their Cronbach's alpha score (Environmental Comfort = .57, Situational Favourableness = .66). Although Environmental Comfort and Situational Favorableness still failed to reach the criterion Cronbach Alpha score of .70, it was deemed suitable to keep them within the study due to previous research acknowledging their importance upon confidence beliefs (Hays et al., 2007; Magyar & Duda, 2000; Podlog & Eklund, 2006; Vealey et al., 1998).

Table 1. The original and final Cronbach Alphas for the M-SSCQ sub scales

Source of Sport-Confidence	Original α	Final α
Mastery	.85	.85
Demonstration of Ability	.83	.83
Mental and Physical Preparation	.83	.83
Physical Self-Presentation	.77	.77
Social Support	.90	.90
Vicarious Experience	.84	.84
*Environmental Comfort	.54	.57
*Situational Favorableness	.60	.66
Leadership	.72	.72

*Environmental Comfort and Situational Favorableness (<0.7)

4.3. RIAI Scale Reliability

Internal consistency scores for the RIAI subscales are presented in *Table 2*. All Cronbach Alphas were between .92 and .94 therefore exceeding the .70 criterion.

Table 2. The Cronbach Alphas for the RIAI sub scales

Variable	α
Intensity Rehabilitation	.92
Intensity Re-entry	.93
Frequency Rehabilitation	.94
Frequency Re-entry	.94

4.4. Underlying Assumptions

Before carrying out the multiple regression analysis, underlying assumptions were tested. Testing the assumptions is important to ensure generalisations of the findings are appropriate.

The assumption for normality was tested using skewness and kurtosis to examine the distribution of the residuals. All nine independent variables (sources of sport-confidence) showed normal distribution with z-scores of +/- 1.96 (Field, 2009). Independence values were attained using a Durbin-Watson test with all sub-scales obtaining values between 1 and 3 meaning independence within the sub-scales was assumed. Levene's test of homogeneity showed all sub-scales to be non-significant ($P > .05$) which suggests the assumption of homogeneity were met (Field, 2009).

4.5. Multiple Regression Analysis

Simple multiple regression analysis was used to identify whether the sources of sport confidence were able to predict rehabilitation re-injury anxiety (intensity and frequency) and return to competition re-injury anxiety (intensity and frequency). Means and standard deviations for the M-SSCQ subscale scores can be found in Table 3. Leadership was the most relied upon source of confidence (4.91 ± 0.90) within the re-injury context whereas; Situational Favorableness was perceived as the least relied upon source (3.56 ± 1.21) during the re-injury anxiety stages.

Table 3. M-SSCQ Sub-Scale Descriptive Statistics

Source of Sport Confidence	Mean	Standard Deviation
Mastery	4.66	1.08
Demonstration of Ability	3.69	1.50
Mental and Physical Preparation	4.59	1.07
Physical Self-Perception	4.20	1.64
Social Support	4.60	1.32
Vicarious Experiences	4.02	1.27
Environmental Comfort	3.62	1.21
Situational Favorableness	3.56	1.39
Leadership	4.91	0.90

Results from the multiple regression analysis showed that the predictor variables accounted for 28.9% ($R^2 = .289$) of variance in re-entry to competition re-injury anxiety intensity (see Table 4). The minimum variance that the predictor variables accounted for was 22.5% ($R^2 = .225$) within rehabilitation re-injury anxiety frequency.

Table 4. Summary of Multiple Regression Analysis for Re-Injury Anxiety Subscales

Re-Injury Anxiety	R	R Square (R ²)	Adjusted R Square	Sdt. Error of the Estimate
Intensity Rehabilitation	.519	.269	.042	8.65
Intensity Re-Entry	.538	.289	.069	10.17
Frequency Rehabilitation	.474	.225	-.016	16.36
Frequency Re-Entry	.495	.245	.011	18.54

The results for the ANOVA test for the re-injury anxiety sub-scales can be seen in Table 5. Rehabilitation frequency re-injury anxiety was the only subscale to not reach an F value of >1 ($F = .933$). All other sub-scales with a value greater than one improved the prediction of the model, due to fitting the model compared to inaccuracy within the model. However, the F values still show no significance. Therefore, the model of sources of confidence were unable to account for a significant proportion of the variance in rehabilitation re-injury anxiety frequency.

Table 5. ANOVA Results for Re-Injury Anxiety Sub-Scales

Sub-Scale	Sum of Squares	df	Mean Square	F	Sig.
Intensity Rehabilitation RIA	798.67	9	88.74	1.186	.340
Intensity Re-Entry RIA	1220.33	9	135.59	1.312	.273
Frequency Rehabilitation RIA	2248.12	9	249.79	.933	.512
Frequency Re-Entry RIA	3240.70	9	360.08	1.048	.428

4.5.1. Rehabilitation Re-Injury Anxiety

Table 6 shows the Beta (β) values for the intensity and frequency of re-injury anxiety in the rehabilitation stage. The Beta values represent the degree of variance between the independent and dependent variables. Physical Self-Perception proves to be the most correlated predictor of re-injury anxiety intensity in the rehabilitation stage ($P = .062$, $\beta = .460$). The biggest predictor of re-injury anxiety frequency during the rehabilitation stage is Environmental Comfort ($P = .089$, $\beta = .397$). However, neither of these predictors show any significance ($P < .05$). There were both positive and negative β values in intensity and frequency of re-injury anxiety in the rehabilitation stage. Mastery, Demonstration of Ability and Social Support had inverse relationships with intensity and frequency re-injury anxiety. Mental and Physical Preparation had an inverse relationship with frequency of re-injury anxiety and Leadership had an inverse relationship with the intensity of re-injury anxiety.

Table 6. Coefficients Summary of Multiple Regression Analysis for Intensity and Frequency of Re-Injury Anxiety in the Rehabilitation Phase

Sub-Scale	Intensity		Frequency	
	Beta (β)	Sig.	Beta (β)	Sig.
Mastery	-.315	.236	-.046	.865
Demonstration of Ability	-.255	.216	-.163	.439
Mental & Physical Preparation	.194	.477	-.384	.178
Physical Self-Perception	.460	.062	.322	.198
Social Support	-.058	.773	-.200	.336
Vicarious Experience	-.080	.690	-.133	.520
Environmental Comfort	.402	.077	.397	.089
Situational Favorableness	.077	.677	.083	.663
Leadership	-.081	.755	.210	.436

4.5.2. Re-Entry Re-Injury Anxiety

The Beta (β) values in Table 7 show Demonstration of Ability ($P = .070$) and Physical Self-Presentation ($P = .060$) to be the two largest contributors of re-injury anxiety intensity in the return to sport phase. However, both predictors are insignificant as they do not meet the desired P value of 0.05. The β values for frequency of re-injury anxiety in the return to sport show no significance and therefore do not contribute to the prediction of sources of confidence on re-injury anxiety in the re-entry phase. Demonstration of Ability and Vicarious Experience both had an inverse relationship to re-injury anxiety in the re-entry phase. Inverse relationships were further seen between Mastery and Leadership for intensity of re-injury anxiety and Mental and Physical Preparation for frequency of re-injury anxiety in the re-entry phase.

Table 7. Coefficients Summary of Multiple Regression Analysis for Intensity and Frequency of Re-Injury Anxiety in the Re-Entry Phase

Sub-Scale	Intensity		Frequency	
	Beta (β)	Sig.	Beta (β)	Sig.
Mastery	-.106	.683	.135	.614
Demonstration of Ability	-.373	.070	-.208	.318
Mental & Physical Preparation	.003	.992	-.420	.136
Physical Self-Perception	.457	.060	.162	.507
Social Support	.000	1.000	.011	.956
Vicarious Experience	-.037	.851	-.170	.405
Environmental Comfort	.303	.172	.373	.105
Situational Favorableness	.216	.239	.282	.139
Leadership	-.042	.870	.118	.657

CHAPTER FIVE

DISCUSSION

5.0. Discussion

5.1. Introduction

This study investigated the ability of sources of confidence to predict re-injury anxiety during injury. The results indicated that no sources of confidence predicted a significant level of variance in the the four types of re-injury anxiety measured (rehabilitation intensity and frequency; re-entry intensity and frequency). Mastery, Demonstration of Ability and Social support sources all showed insignificant, inverse relationships with rehabilitation re-injury anxiety intensity and frequency. Similarly, Leadership showed an insignificant inverse relationship with re-injury anxiety intensity in the rehabilitation stage. Environmental Comfort and Physical Self-Perception were two of the main predictors of re-injury anxiety intensity and frequency during rehabilitation; however, both succeeded to show an insignificant positive relationship, so should be approached with caution. In the re-entry to competition phase, Demonstration of Ability and Vicarious Experience both had insignificant inverse relationships related to re-injury anxiety. The best predictors of re-injury anxiety intensity and frequency in the re-entry from injury stage were Demonstration of Ability and Environmental comfort. These sources, however, show no significance.

The following chapter provides a discussion of the results obtained within the two sub-components of re-injury anxiety; intensity and frequency. The strengths and limitations of the study will be identified followed by an outline of the study's practical implications and suggestions for further research.

5.2. Sources of Confidence and Re-Injury Anxiety

No sources of confidence significantly predicated variance in re-injury rehabilitation or return anxiety (across both intensity and frequency) in the present study. These findings do not match current available academic literature which highlights the reliance athletes place on confidence beliefs when returning to sport post-injury (Evans *et al.*, 2000; Podlog & Eklund, 2007). Furthermore, a wealth of sporting injury research has highlighted the importance of confidence restoration when attempting to reduce re-injury anxiety (Taylor & Taylor, 1997; Chase *et al.*, 2005). There is a continuing trend of insignificance throughout all sub-scales, suggesting the sources of confidence hold no importance when attempting to predict Re-Injury Anxiety levels.

Athletes' level of performance and number of years participating in sport could provide reasoning for the counteracting and insignificant findings. This is due to the sample

consisting of elite and non-elite athletes. Kingston *et al.*, (2010) recognised that elite athletes are more likely to have greater access to coping resources, so subsequently separated them into two different samples to account for the two groups. Athletes who have participated for longer in their sport may have developed facilitative coping resources from previous injuries throughout their sporting career (Mitchell *et al.*, 2014) which could account for a larger success in the return to sport. Different athlete's experiences during injury shows the complexity of the process, making it challenging for medical practitioners working with injured athletes.

Environmental Comfort is a source concerned with athlete's surroundings and how comfortable they feel within them (Vealey *et al.*, 1998). The current study found Environmental Comfort to be the largest predictor of re-injury anxiety within the rehabilitation and re-entry to competition phases. A positive relationship was seen (as environmental comfort increases, so does re-injury anxiety) which suggests that in high pressure situations, relying on Environmental Comfort for confidence would lead to an increase in re-injury anxiety intensity and frequency. The findings of the current study oppose available literature, as Magyar and Duda (2000) found Environmental Comfort to be a confidence restoring source during rehabilitation. Additionally, it was suggested that the situational aspects of the rehabilitation context were effective at influencing the athlete's confidence beliefs (Magyar & Duda, 2000). Similarly, research by Cupal and Brewer (2001) found that athlete's who are in an environment they feel comfortable in are more likely to experience reductions in re-injury anxiety. This encourages these athletes to relax during rehabilitation sessions thus improving engagement leading to more successful outcomes. On the other hand, if the environment does not include achievement nourishing situations to fulfil the athlete's basic needs, their confidence is likely to decline (Wadey & Evans, 2011). Consequently, this could result in heightened levels of re-injury anxiety from rehabilitation and re-entry to competition pressures. However, the Environmental Comfort source failed to reach the desired score in the reliability testing and showed no significance, therefore should be interpreted with caution.

During the rehabilitation and re-entry phases of injury, Demonstration of Ability appeared to show insignificant inverse relationships with both re-injury anxiety intensity and frequency (i.e. an increased reliance upon demonstration of ability meant re-injury anxiety intensity and frequency decreased). As a self-referenced and socially comparative source, being able to demonstrate a high level of ability to others is imperative if an athlete is to increase their

confidence beliefs (Evans *et al.*, 2000; Hayes *et al.*, 2007). Magyar and Duda (2000) found that individuals who are more ego-orientated relied on demonstration of ability during the beginning stages of rehabilitation. For example, performing a skill or exercise more successfully than their peers will prove their competency and help to reduce re-injury anxiety intensity and frequency. The population of the current study consisted of 24 males and 15 females which could explain the reliance placed upon demonstration of ability within this study. Vealey *et al.* (1998) found that males are more likely to be ego orientated, therefore regard Demonstration of Ability as an important source of confidence. Carson and Polman (2012) identified the need for an athlete to concentrate on the skill they are carrying out rather than their injury to help facilitate their performance, develop confidence and reduce re-injury worries. Similarly, becoming obsessive over the injury and a lack of confidence can cause reduced feelings of competency, resulting in heightened re-injury worries. Therefore, Johnston and Carroll (1998) suggested demonstration of ability is effective at reducing re-injury anxiety and is especially important during the return to sport.

Mastery sources of confidence had insignificant predictions on re-injury anxiety intensity and frequency in the rehabilitation and re-entry to competition stages. Furthermore, Mastery had an inverse relationship with rehabilitation intensity, frequency and re-entry intensity, and a positive relationship with re-entry frequency. The findings suggest that athletes who source their confidence beliefs from Mastery are likely to experience lower levels of re-injury anxiety intensity and frequency. These results are expected as they support current available literature identifying personal mastery as a salient source in relation to positive confidence judgements during rehabilitation and re-entry to competition (Vealey & Chace, 2008). The current study found mastery to be one of the strongest insignificant predictors of re-injury anxiety, supporting the findings of Magyar and Duda (2000) as they identified mastery to be the best predictor of confidence restoration during the mid-point of rehabilitation. Aside from re-entry frequency, the identified inverse relationships for the sub-scales is consistent with previous literature. Bandura (1997) recognised performance accomplishments as the largest predictor of self-efficacy, and Hayes *et al.* (2007) further discovered performance accomplishments as an important source for gaining confidence beliefs amongst World Class athletes. Task based performance accomplishments (i.e. mastery) were identified to facilitate more successful performances rather than outcome based performance accomplishments (Hayes *et al.*, 2007). Research has suggested that sources based on controllable factors (i.e. mastery) are more facilitative than sources based on uncontrollable factors, which could establish more stable and robust confidence beliefs (Vealey *et al.*, 1998;

Kingston *et al.*, 2010). Therefore, athletes within this study are more likely to have stable sport-confidence from gaining confidence from mastery, thus creating a buffering effect towards re-injury anxiety during the rehabilitation phase. Chace *et al.* (2005) found performance accomplishments to be an important contributor to confidence restoration during injury, which helps to explain the current study's findings of low levels of re-injury anxiety associated with mastery. However, while the findings agree with current literature available, they must be interpreted with caution due to the insignificance found within the sub-scale of mastery.

Despite insignificant findings, the Vicarious Experience source of confidence showed inverse relationships with all rehabilitation and re-entry to competition sub-scales. This suggests that when reliance on the source increased, levels of re-injury anxiety intensity and frequency decrease. Available literature agrees with the findings as Vicarious Experience is continuously recognised as an effective source for increasing an athlete's perceptions of confidence beliefs (Bandura, 1977; Vealey *et al.*, 1989). Additionally, injury literature identifies Vicarious Experience as source responsible for the restoration of confidence in injured athletes (Feltz, 2007; Evans *et al.*, 2000). An athlete can derive confidence through Vicarious Experience by observing a fellow injured athlete perform successfully within rehabilitation and re-entry to competition (e.g. performing a rehabilitation skill or reaching pre-injury levels of fitness) (Magya & Duda, 2000; Feltz, 2007), thus reducing re-injury anxiety. Reliance upon Vicarious Experience could stem from the athlete being unable to perform rehabilitation skills successfully without observing a fellow athlete complete a similar skill beforehand. Furthermore, this finding could be due to a large proportion of the sample consisting of athletes competing in team sports, as they are used to observing and being surrounded by team mates in every aspect of their sport. Future research could explore individual and team sport athletes separately to see if there are and differences in the relationship between sources of confidence and re-injury anxiety levels.

Throughout rehabilitation, social support insignificantly contributed towards reduction of re-injury anxiety beliefs. The insignificance is surprising due to the amount of literature available confirming the importance of social support in relation to confidence beliefs and attendance to rehabilitation sessions (Podlog & Eklund, 2007). Johnston and Carroll (1998) suggested that the appropriate type of support changed throughout the injury process. Amongst the four types of social support (emotional, esteem, tangible and informational), Wadey and Evans (2011) identified emotional and informational support as the most effective during

rehabilitation and the return to sport. Furthermore, Magyar and Duda (2000) found athletes who have higher perceptions of social support are likely to stay focused on their own progress, facilitating internal and self-referenced confidence beliefs. However, athletes have expressed that not all types of support are sufficient to their needs as some may be inappropriate, especially during rehabilitation (Wadey & Evans, 2011). Providing the correct type of support can enhance confidence beliefs in the injured site and decrease levels of re-injury anxiety. The findings of the present study during the re-entry phase coincide with the literature as social support, although insignificant, had a positive relationship with re-injury anxiety intensity and frequency. This may be due to the athletes receiving the wrong type of support at the wrong time therefore reducing its effectiveness. Taylor and Taylor (1997) provided explanation for this, suggesting the sources of support received during rehabilitation were not always effective at restoring confidence beliefs during the re-entry to competition as well. Similarly, Bianco (2001) found that an athletes support networks varied across the stages of recovery. Additionally, there was no specification on what stage of recovery the athlete was in, meaning the social support source may not be representative of the rehabilitation and return to sport stages combined. Further research to examine the effects of social support on rehabilitation and return to sport separately is required.

Previous injury history characteristics could influence feelings towards the injury process, therefore influencing the sources used for confidence restoration (Wadey & Evans, 2011). A lack of understanding due to the absence of previous injuries could cause the athlete to become reliant on medical professionals (e.g. physiotherapists) during the rehabilitation phase. This is supported by the findings in the present study, as it identified an inverse relationship between Leadership and re-injury anxiety intensity during the rehabilitation and return to sport stages. Vealey *et al.* (1988) identified Leadership as an important source of confidence during the rehabilitation stage as athletes are likely to trust their coach or physiotherapist to make important decisions for them, thus giving them confidence within the process (e.g. with rehabilitation exercises). Similarly, Carson and Polman (2012) emphasised the vitality of communication between the athletes, coaches and treatment team during the return to sport, reducing worries surrounding psychological readiness. Subsequently, the confidence derived from appropriate and knowledgeable Leadership will act as a buffer and could potentially help to reduce re-injury worries (Cohen & Wills, 1985; Rees *et al.*, 2010). However, due to the insignificance of the Leadership sub-scale, caution should be taken when interpreting the sources' ability to predict re-injury anxiety.

Physical Self-Perception was found to have an insignificant positive relationship with re-injury anxiety intensity and frequency (i.e. as Physical Self-Perception increases, Re-Injury Anxiety does so simultaneously). This finding is consistent with available literature as Magyar and Duda (2002) found it to be one of the least significant sources of confidence. Although the sample of the current study is largely dominated by males, the population of females (n = 15) could still account for the substantial contribution of the Physical Self-Perception source. The effects of Physical Self-Perception are particularly significant during injury as perceived negative body image was found to be a great stressor for those who are injured (Chan & Grossman, 1998). Vealey *et al.* (1998) recognised the importance that girls place on their body image, especially during re-entry to sport after a considerable amount of time out of competition. A number of studies focusing on long distance runners found Physical Self-Perception to be influential, as athletes who had poor perceptions of their body image recorded feelings of stress compared to those who were comfortable with their body image (Greist *et al.*, 1978; Wilson *et al.*, 1980 & Gondola & Tuckman, 1982). Research by Podlog and Eklund (2006) confirms the present research's findings, suggesting that during the returning to competition, athletes have to deal with pressures concerning their self-image and how others perceive them. This could provide explanation for the increased levels of re-injury anxiety intensity and frequency.

The present study's results attempt to provide an insight of how the sources of confidence can predict re-injury anxiety in injured athletes. However, throughout the duration of the injury process, research has highlighted the changing nature of athlete's confidence beliefs (Magyar & Duda, 2000). Therefore, this could provide reasoning for the opposing findings when compared to previous literature as there was no insight into which stage of rehabilitation or return to sport athlete's were in. For example, an athlete at the beginning of their rehabilitation may rely on different sources than an athlete at the end of rehabilitation. However, future research could be done to explore the athlete's sources of confidence at the different points within rehabilitation and the lead up to the return to sport.

To summarise, results from the present study show insignificant relationships between all sources of confidence and re-injury anxiety sub-scales (rehabilitation and re-entry to competition intensity and frequency). Despite the insignificance, Environmental Comfort and Demonstration of Ability were the largest predictors of re-injury anxiety.

5.3. Strengths and Limitations

The present study has a number of recognized strengths and limitations. With regards to strengths, the subject of study (relationship between confidence and re-injury anxiety during athletic injury) has received little research in present psychological literature. Additionally, re-injury anxiety was separated into two dimensions; intensity and frequency in both the rehabilitation and re-entry back into competition phases. Regarding the questionnaires used (M-SSCQ and RIAI-I), both were modified specifically within the injury context, creating specific measures appropriate for the current study. Furthermore, the study used a diverse sample which means the results can be generalised to a wider sporting population (e.g. age, sport type, level of competition, injury severity). The nature of data collection meant it did not interfere with the progress of the athlete's rehabilitation or return to sport and it can be completed at any stage of the process.

One major limitation of the study lies in the reliability of the Modified Sources of Confidence Questionnaire (M-SSCQ). During the initial testing of internal reliability, both situational favorableness and environmental comfort sources of confidence had values below the desired Cronbach Alpha score of .70. Therefore, one item from both the situational favorableness and environmental comfort sub-scales was removed to increase the final scores to .66 (situational favorableness) and .57 (environmental comfort). In conjunction, Magyar and Duda's (2000) study found constant unacceptable Cronbach's alpha scores for Situational Favourableness throughout three stages of rehabilitation. Following these scores, Magyar and Duda (2000) removed the sub-scale to improve the reliability. Similarly, Wilson *et al.* (2004) found the items intended to measure Situational Favourableness were problematic. This resulted in the Situational Favourableness sub-scale being dropped from the SSCQ model as it was deemed unimportant within the sample of master athletes. These findings question the importance of the Situational Favourableness sub-scale within Vealey's (1986) model when examining athletes most salient sources of confidence. When considering Environmental Comfort, Kingston *et al.* (2010) found the source to hold little importance for elite athletes during the lead up to important competition. Therefore, the lack of importance placed on the Situational Favourableness and Environmental sub-scales could provide reasoning for the insignificant findings within the present study. However, previous literature highlights the significance of both sub-scales so it was considered acceptable to still include them within the study.

A second limitation was the sample size meaning there was a loss of statistical power resulting in a large variance effect on the regression analysis. With a larger sample size, it is more likely that there would have been significance shown between the sources of confidence and re-injury anxiety with a small variance effect. The results of the present study showed no significance which could be due to many limiting factors of the study. Furthermore, the Likert measurement scales used within the questionnaires are based on a subjective interpretation which could cause individual variance within the scales. Subsequently, the findings from the questionnaires could be inaccurate, something that could be avoided through the use of qualitative data.

The study fails to question the relationship between sources of confidence and re-injury anxiety within the onset, rehabilitation and return to sport stages separately. Previous literature has recognized that the psychological responses to injury change throughout the course of injury due to the changing demands and stressors (Johnston & Carroll, 1998; Bianco, 2001). Therefore, the findings do not provide explanation of how the reliance upon the different sources of confidence effect levels of re-injury anxiety within the three stages of injury.

5.4. Practical Implications

The current study's findings identified many associated practical implications. The insignificance found across all sources of confidence in relation to the re-injury anxiety sub-scales questions the current literature available. Findings indicate the temporal pattern of the sources of confidence throughout the three stages of injury. It is important that applied practitioners are aware of the changing nature of sources through the injury process in order to fully benefit an athlete. Having an understanding of the sources of confidence most salient within each stage of injury and how they predict levels of re-injury anxiety will aid confidence restoration and in turn, reduce the risk of actual re-injury.

In line with previous research, Environmental Comfort was identified as the largest predictor of re-injury anxiety within the rehabilitation and re-entry to competition stages. It is important to note that within the rehabilitation and re-entry sub-scales, the relationships shown were positive (i.e. as Environmental Comfort increases, re-injury anxiety increases simultaneously). Environmental Comfort refers to a confidence deriving from how comfortable an athlete feels in their surroundings (e.g. liking the rehabilitation environment) This agrees with available literature as the rehabilitation environment can be an unfamiliar

surrounding for the athlete, meaning they may not feel completely relaxed resulting in a rise in re-injury anxiety. Practitioners should use this knowledge to provide an ideal environment for the athlete which may help with reducing re-injury anxiety levels.

Inverse relationships between Demonstration of Ability and Re-Injury anxiety were identified within both sub-scales of the rehabilitation and re-entry to competition stages. Although Demonstration of Ability had no significant findings, it still showed the importance of performance-related sources in relation to reducing re-injury anxiety. During rehabilitation and re-entry to competition, athletes may have concerns of reaching expectations placed on them by others (Podlog & Eklund, 2006). Therefore, being able to demonstrate their ability which will give them a sense of competency and will help to reduce their feelings of re-injury anxiety (Taylor & Taylor, 1997). Applied practitioners must be aware of how they can facilitate an athlete who derives their confidence from social comparative sources such as Demonstration of Ability in order to give them the best opportunity of a successful return.

5.5. Recommendations for Future Research

A selection of future research suggestions can be made following the limitations identified within this study. The small sample size lead to poor internal reliability of two of the sub-scales; Situational Favorableness and Environmental Comfort as they failed to reach the desired Cronbach's alpha score. However, the sub-scales were still kept within the study as they were considered important in previous research studies (Magyar & Duda, 2000; Podlog & Eklund, 2006). As a result, the validity of the sub-scales may have been compromised and their contribution towards the study could be considered questionable. Throughout the three stages of injury, sources of confidence were shown to follow a temporal pattern. Subsequently, a longitudinal study could provide knowledge on which sources are most salient during each stage, meaning practitioners would have a better understanding of how to restore confidence and reduce re-injury anxiety throughout the injury. Additionally, participants will be able to answer questions on their current feelings as they experience the process which will reduce chances of forgetability. The current study produced quantitative data, which does not help to express the reasons that affect athlete's sources of confidence, and in turn, re-injury anxiety. A suggestion for this includes adding questionnaires to the study to produce in depth, qualitative data which could help to increase understating of how to maintain desired confidence beliefs.

Further research should consider the effects that gender has on the relationship between sources of confidence and re-injury anxiety. A previous study by Kingston *et al.*, (2010) found that males and females derive their confidence from different sources. Therefore, it would be beneficial to investigate the gender differences within an injury context. This would help professionals working with injured athletes to know what interventions are most advantageous for males and females separately. A final suggestion is to examine the affect that different levels of competition have on the relationship between sources of confidence and re-injury anxiety. Hayes *et al.*, (2007) acknowledged differences between how elite athletes ranked sources of confidence compared to non-elite athletes. This finding suggests that elite and non-elite athletes would experience varying relationships between sources of confidence and re-injury anxiety levels. Subsequently, future research should investigate the differences between sources of confidence and re-injury anxiety for the different competition levels.

CHAPTER SIX

CONCLUSION

6.0. Conclusion

To summarise, the present study aimed to explore the ability of the sources of sport confidence to predict re-injury anxiety in injured athletes. There was no significant relationship found between the nine sources of confidence and their ability to predict re-injury anxiety intensity and frequency in the rehabilitation and return to sport stages. Environmental Comfort was the largest contributor in prediction of re-injury anxiety across all sub-scales of rehabilitation and re-entry to competition. On the other hand, Demonstration of Ability showed an inverse relationship when predicting re-injury anxiety. Vicarious Experience and Mastery were also predictors of an inverse relationship with all of the re-injury anxiety sub-scales, with the exception of Mastery predicting re-entry to competition frequency. Within an applied context, practitioners, coaches and athletes alike need to understand which of the sources of confidence are likely to heighten re-injury anxiety levels within the stages of injury in order to create an ideal environment where athletes can progress successfully throughout the injury process. Therefore, in relation to the current study, practitioners should concentrate on methods to stimulate an environment to facilitate Mastery and Demonstration of Ability in order to aid a successful return to sport. The results suggest that athletes should avoid acquiring confidence from Physical Self-Presentation to reduce an increase in re-injury anxiety.

In conclusion, the present study further develops knowledge of the relationship between the sources of confidence and how they can predict levels of re-injury anxiety during the stages of injury. However, to broaden psychologists' understanding of this research area, further research of a qualitative nature is needed.

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APPENDICES

**APPENDIX A
PARTICIPATION INFORMATION SHEET**

Participant Information Sheet

Title of project: The relationship between sources of confidence and re-injury anxiety.

Background

The purpose of this study is to investigate the relationship between the sources of confidence and re-injury anxiety in injured athletes. Gaining an understanding in this area would help coaches and athletes alike understand the role of confidence and where athletes source their confidence from to help with the recovery and return to sport stages of injury. The study is being undertaken at Cardiff Metropolitan University by an undergraduate studying a sport degree.

Your participation in the research project:

Why have you been asked?

You have been asked to take part in this study because you are a suitable candidate who has met the required criteria; you are 18 years old or above and have competed at club level or above in your chosen sport. You have sustained an injury in the last six months which lasted longer than four weeks.

What would happen if you agree to take part in this study?

If you agree to participate in this study:

1. You will be asked to read and sign a consent form
2. You will be asked to fill out and complete an information form. This is where you will be asked questions about yourself, your sport and your injury. This will give the researcher essential background information.
3. You will then be asked to fill out two questionnaires, one regarding your sources of confidence and the other regarding re-injury anxiety levels.

Are there any risks?

I do not think that you will be exposed to any risks whilst taking part in the study.

What happens to the data gathered from the questionnaires?

The data collected from the questionnaires will be kept on a private, personal computer. All information disclosed by you, as the participant, will be kept confidential and only my superior and I will be able to access the data.

What happens next?

If you agree to participate in this study, you will need to read and sign the participant consent form. Only sign this form if you fully understand the study and all your questionnaires have been answered. This form needs to be completed only if you are willing to take part in the study.

How we protect your privacy:

Your privacy will be protected and I will ensure that all data and information gathered on you is kept safe to ensure confidentiality. At the end of the study, and data/questionnaires about you will be destroyed. If you wish to withdraw from the study, your information will be destroyed and not used.

Further information

If you have any questions about the research or how we intend to carry out the study, please contact either one of us.

Researchers: Naomi Jones

Email: @outlook.cardiffmet.ac.uk

APPENDIX B
INFORMED CONSENT FORM

PARTICIPANT CONSENT FORM

Title of Project: The relationship between sources of confidence and re-injury anxiety.

Name of Researcher: Naomi Jones

Participant to complete this section: **Please initial each box.**

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.

3. I agree to take part in the above study.

4. I understand that information from the study may be used for reporting purposes, but I will not be identified.

Signature of Participant

Name of participant

Date

APPENDIX C

DEMOGRAPHIC INFORMATION

Demographic Information

Age _____

Gender _____

What is your main Sport _____

Years competing _____

What is the highest level that you have competed at (e.g., International age-group, National, Regional, Club)?

When did you compete at this level (highest level)? _____

What is/was the nature of the injury that you sustained? _____

When did you sustain the injury? _____

Has the injury required surgery? Yes / No _____

If yes what was the date of your surgery? _____

Have you already returned to competitive sport post-injury? Yes / No _____

When did you return to competitive sport post-injury? _____

How long do you anticipate/did the injury prevent you from competing in your main sport?

Could you tell us about any previous injuries - i.e., previous injuries that you sustained, when, and how long they kept you out of sport? _____

Do you have private medical health cover? Yes/No _____

APPENDIX D

MODIFIED SOURCES OF SORT

CONFIDENCE QUESTIONNAIRE

The Modified Sources of Sport-Confidence Questionnaire

Athlete Self-Rating Scale (SSCQ)

We are interested in learning about things that help **YOU** be self-confident when participating in your **rehabilitation program**. Listed below are some things that may help/have helped athletes feel confident during rehabilitation. **Please circle the extent to which each statement reflects your current/past rehabilitation experience.** Please respond to every statement even though they may appear repetitive. There are no right or wrong answers because each athlete is different. Please be honest- your answers will be completely confidential.

I usually gain/gained (as appropriate) confidence in my rehabilitation programme from...

		Not at all			Sometimes			Always		
1	Getting positive feedback from my teammates and/or friends	0	1	2	3	4	5	6	7	
2	Completing rehabilitation exercises faster than others	0	1	2	3	4	5	6	7	
3	Keeping my focus on the task	0	1	2	3	4	5	6	7	
4	Psyching myself up	0	1	2	3	4	5	6	7	
5	Mastering a new skill in rehabilitation	0	1	2	3	4	5	6	7	
6	Getting breaks from my physiotherapist	0	1	2	3	4	5	6	7	
7	Performing in a rehabilitation environment that I like and in which I feel comfortable	0	1	2	3	4	5	6	7	
8	Feeling good about my weight.	0	1	2	3	4	5	6	7	
9	Believing in my physiotherapist's abilities	0	1	2	3	4	5	6	7	
10	Knowing I have support from others that are important to me	0	1	2	3	4	5	6	7	
11	Demonstrating that I am better than others	0	1	2	3	4	5	6	7	
12	Seeing successful rehabilitation performances by other athletes	0	1	2	3	4	5	6	7	
13	Knowing that I am mentally prepared for the situation.	0	1	2	3	4	5	6	7	
14	Following certain rituals (e.g. wearing a lucky shirt, eating certain foods etc.)	0	1	2	3	4	5	6	7	
15	Improving my performance on a skill in rehabilitation	0	1	2	3	4	5	6	7	
16	Seeing the breaks are going my way	0	1	2	3	4	5	6	7	
17	Feeling that I look good	0	1	2	3	4	5	6	7	
18	Knowing my physiotherapist will make good decisions	0	1	2	3	4	5	6	7	
19	Being told that others believe in me and my abilities	0	1	2	3	4	5	6	7	
20	Showing my ability by doing my best in rehabilitation	0	1	2	3	4	5	6	7	
21	Watching another athlete I admire perform a rehabilitation skill	0	1	2	3	4	5	6	7	
22	Staying focused on my goals	0	1	2	3	4	5	6	7	
23	Improving my rehabilitation skills	0	1	2	3	4	5	6	7	
24	Feeling comfortable in the rehabilitation environment in which I am performing	0	1	2	3	4	5	6	7	
25	Feeling that everything is "going right" for me in that situation	0	1	2	3	4	5	6	7	
26	Feeling as though my body looks good	0	1	2	3	4	5	6	7	
27	Knowing my coach is a good leader	0	1	2	3	4	5	6	7	

I usually gain/gained (as appropriate) confidence in my rehabilitation programme from...

		Not at all			Sometimes			Always		
28	Being encouraged by physiotherapist and/or family	0	1	2	3	4	5	6	7	
29	Knowing I can outperform others on rehabilitation exercises	0	1	2	3	4	5	6	7	
30	Watching a teammate successfully perform rehabilitation exercises	0	1	2	3	4	5	6	7	
31	Preparing myself physically and mentally for a situation	0	1	2	3	4	5	6	7	
32	Increasing the number of rehabilitation skills I can perform	0	1	2	3	4	5	6	7	
33	Liking the environment where I am performing	0	1	2	3	4	5	6	7	
34	Having trust in my physiotherapist's decisions	0	1	2	3	4	5	6	7	
35	Getting positive feedback from physiotherapist and/or family	0	1	2	3	4	5	6	7	
36	Proving I am better than others in rehabilitation	0	1	2	3	4	5	6	7	
37	Seeing a friend perform rehabilitation successfully	0	1	2	3	4	5	6	7	
38	Believing in my ability to give maximum effort to complete my rehabilitation program	0	1	2	3	4	5	6	7	
39	Receiving support and encouragement from others	0	1	2	3	4	5	6	7	
40	Showing I am one of the best in rehabilitation	0	1	2	3	4	5	6	7	
41	Watching my teammates who are at my level perform well	0	1	2	3	4	5	6	7	
42	Developing new skills and improving	0	1	2	3	4	5	6	7	
43	Feeling my physiotherapist provides effective leadership	0	1	2	3	4	5	6	7	

APPENDIX E
RE-INJURY ANXIETY INVENTORY

RE-INJURY ANXIETY

Below are a number of statements about re-injury worries that athletes may experience during rehabilitation and return to competition. Read each statement and circle the appropriate number to indicate how you feel right now. For each statement first rate how much (i.e., level) of the symptom you experienced, and then rate the frequency (i.e., how often) of these symptoms.

		LEVEL (HOW MUCH)				FREQUENCY (HOW OFTEN)						
		Not at all	Some-what	Moderately so	Very much so	Never						All the time
		0	1	2	3	1	2	3	4	5	6	7
1	I am/was worried about becoming re-injured during rehabilitation	0	1	2	3	1	2	3	4	5	6	7
2	I feel/felt nervous about becoming re-injured during rehabilitation	0	1	2	3	1	2	3	4	5	6	7
3	I have/had doubts that I will remain injury free during rehabilitation	0	1	2	3	1	2	3	4	5	6	7
4	I feel/felt on edge about becoming re-injured during rehabilitation	0	1	2	3	1	2	3	4	5	6	7
5	I am/was worried that I may not do as well as I could in rehabilitation due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
6	My body feels/felt tense about rehabilitation because of re-injury worries	0	1	2	3	1	2	3	4	5	6	7
7	I am/was worried about failing during rehabilitation due to my re-injury worries	0	1	2	3	1	2	3	4	5	6	7
8	Re-injury worries about rehabilitation make my body feel tense	0	1	2	3	1	2	3	4	5	6	7
9	I am/was worried about performing poorly during rehabilitation due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
10	I feel/felt my stomach sinking due to re-injury worries during rehabilitation	0	1	2	3	1	2	3	4	5	6	7
11	I am/was confident about not becoming re-injured during rehabilitation because I mentally picture myself staying injury free	0	1	2	3	1	2	3	4	5	6	7
12	I am/was worried about concentrating during rehabilitation because of re-injury worries	0	1	2	3	1	2	3	4	5	6	7
13	My body feels/felt tight due to re-injury worries during rehabilitation	0	1	2	3	1	2	3	4	5	6	7

		LEVEL (HOW MUCH)				FREQUENCY (HOW OFTEN)						
		Not at all	Some-what	Moderately so	Very much so	Never						All the time
14	I am/was worried about becoming re-injured during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
15	I feel/felt nervous about becoming re-injured during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
16	I have/had doubts that I will remain injury free during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
17	I feel/felt on edge about becoming re-injured during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
18	I am/was worried that I may not do as well as I could on returning returning to competition due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
19	My body feels/felt tense about re-entering competition because of my re-injury worries	0	1	2	3	1	2	3	4	5	6	7
20	I feel/felt confident that I will not become re-injured during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
21	I am/was worried about failing when re-entering into competition due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
22	Re-injury worries about re-entry into competition make/made my body feel tense	0	1	2	3	1	2	3	4	5	6	7
23	I am/was worried about performing poorly during re-entry into competition due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
24	I am/was worried about failing to achieve full re-entry into competition due to re-injury worries	0	1	2	3	1	2	3	4	5	6	7
25	I am/was worried that others will be disappointed if I become re-injured during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
26	The thought of re-injury during re-entry into competition makes/made my palms sweaty	0	1	2	3	1	2	3	4	5	6	7
27	I am/was worried about concentrating during re-entry into competition because of re-injury worries	0	1	2	3	1	2	3	4	5	6	7

28	My body feels/felt tight due to re-injury worries during re-entry into competition	0	1	2	3	1	2	3	4	5	6	7
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