

Cardiff School of Sport
DISSERTATION ASSESSMENT PROFORMA:
 Empirical ¹

Student name:	<input type="text" value="Josh Sandel"/>	Student ID:	<input type="text" value="ST20026848"/>
Programme:	<input type="text" value="SCRAM"/>		
Dissertation title:	<input type="text" value="Sources of Confidence and Robust Confidence as Predictors of Re-Injury Anxiety"/>		
Supervisor:	<input type="text" value="Dr. Owen Thomas"/>		
Comments	Section		
	Title and Abstract (5%) Title to include: A concise indication of the research question/problem. Abstract to include: A concise summary of the empirical study undertaken.		
	Introduction and literature review (25%) To include: outline of context (theoretical/conceptual/applied) for the question; analysis of findings of previous related research including gaps in the literature and relevant contributions; logical flow to, and clear presentation of the research problem/ question; an indication of any research expectations, (i.e., hypotheses if applicable).		
	Methods and Research Design (15%) To include: details of the research design and justification for the methods applied; participant details; comprehensive replicable protocol.		
	Results and Analysis (15%) ² To include: description and justification of data treatment/ data analysis procedures; appropriate presentation of analysed data within text and in tables or figures; description of critical findings.		
	Discussion and Conclusions (30%) ² To include: collation of information and ideas and evaluation of those ideas relative to the extant literature/concept/theory and research question/problem; adoption of a personal position on the study by linking and combining different elements of the data reported; discussion of the real-life impact of your research findings for coaches and/or practitioners (i.e. practical implications); discussion of the limitations and a critical reflection of the approach/process adopted; and indication of potential improvements and future developments building on the study; and a conclusion which summarises the relationship between the research question and the major findings.		
	Presentation (10%) To include: academic writing style; depth, scope and accuracy of referencing in the text and final reference list; clarity in organisation, formatting and visual presentation		

¹ This form should be used for both quantitative and qualitative dissertations. The descriptors associated with both quantitative and qualitative dissertations should be referred to by both students and markers.

² There is scope within qualitative dissertations for the RESULTS and DISCUSSION sections to be presented as a combined section followed by an appropriate CONCLUSION. The mark distribution and criteria across these two sections should be aggregated in those circumstances.

CARDIFF METROPOLITAN UNIVERSITY
Prifysgol Fetropolitan Caerdydd

CARDIFF SCHOOL OF SPORT

DEGREE OF BACHELOR OF SCIENCE (HONOURS)

**SPORT CONDITIONING, REHABILITATION AND
MASSAGE**

2014-5

**Sources of Confidence and Robust Confidence as
Predictors of Re-Injury Anxiety**

**(Dissertation submitted under the Sports Psychology
area)**

JOSH SANDEL

ST20026848

SOURCES OF CONFIDENCE AND
ROBUST CONFIDENCE AS PREDICTORS
OF RE-INJURY ANXIETY

Certificate of student

By submitting this document, I certify that the whole of this work is the result of my individual effort, that all quotations from books and journals have been acknowledged, and that the word count given below is a true and accurate record of the words contained (omitting contents pages, acknowledgements, indices, tables, figures, plates, reference list and appendices). I further certify that the work was either deemed to not need ethical approval or was entirely within the ethical approval granted under the code entered below.

Ethical approval code: 14/5/287U
Word count: 10,945
Name: Josh Sandel
Date: 19/03/2015

Certificate of Dissertation Supervisor responsible

I am satisfied that this work is the result of the student's own effort and was either deemed to not need ethical approval (as indicated by 'exempt' above) or was entirely within the ethical approval granted under the code entered above.

I have received dissertation verification information from this student

Name: _____
Date: _____

Notes:

The University owns the right to reprint all or part of this document.

CONTENTS

Tables	
Acknowledgements	i
Abstract	ii
<u>CHAPTER 1 – INTRODUCTION</u>	1
1.1 Introduction	2
<u>CHAPTER 2 – LITERATURE REVIEW</u>	4
2.1 Introduction	5
2.2 Injury in Sport	5
2.3 Psychological Response to Injury	6
2.4 Re-Injury Anxiety	8
2.5 Self-Efficacy and Self-Confidence	10
2.6 Robust Sport-Confidence	13
2.7 Relationship between Confidence and Re-Injury Anxiety	14
<u>CHAPTER 3 – METHODOLOGY</u>	16
3.1 Research Design	17
3.2 Participants	17
3.3 Measures	18
3.4 Procedure	20
3.5 Data Analysis	21
<u>CHAPTER 4 – RESULTS</u>	22
4.1 Scale Internal Reliability	23
4.2 Means and Standard Deviations	24
4.3 Confirming Underlying Assumptions	24
4.4 Multiple Regression Analysis	25
4.4.1 M-SSCQ and TROSCI on Rehabilitation Re-Injury Anxiety Frequency	26
4.4.2 M-SSCQ and TROSCI on Rehabilitation Re-Injury Anxiety Intensity	27
4.4.3 M-SSCQ and TROSCI on Re-entry Re-Injury Anxiety Frequency	29

4.4.4 M-SSCQ and TROSCI on Re-entry Re-Injury Anxiety Intensity	30
---	----

<u>CHAPTER 5 – DISCUSSION</u>	32
--------------------------------------	----

5.1 Introduction	33
5.2 Sources of Confidence and Re-Injury Anxiety	33
5.3 Strengths and Limitations	35
5.4 Practical Implications	37
5.5 Recommendations for Future Research	38
5.6 Conclusion	39

<u>REFERENCE LIST</u>	41
------------------------------	----

<u>APPENDICES</u>	51
--------------------------	----

Appendix A – Participant Information Sheet

Appendix B – Informed Consent

Appendix C – Demographic Information Sheet

Appendix D – Modified Sources of Sport Confidence Questionnaire

Appendix E – Trait Robustness of Sport Confidence Inventory

Appendix F – Re-injury Anxiety Inventory

Appendix G – Ethical Approval

TABLES

<i>Table 1</i>	17
The competitive level of participating athletes	
<i>Table 2</i>	23
Co-efficient alpha for the subscales of the M-SSCQ, TROSCI framework and subscales of the RIAI	
<i>Table 3</i>	24
Descriptive Statistics of the M-SSCQ, TROSCI and RIAI Subscales	
<i>Table 4</i>	26
Model Summary for rehabilitation re-injury anxiety frequency	
<i>Table 5</i>	26
ANOVA table for rehabilitation re-injury anxiety frequency	
<i>Table 6</i>	27
Correlation table for re-injury anxiety frequency	
<i>Table 7</i>	27
Model Summary table for rehabilitation re-injury anxiety intensity	
<i>Table 8</i>	28
ANOVA table for rehabilitation re-injury anxiety intensity	
<i>Table 9</i>	28
Correlation table for rehabilitation re-injury anxiety intensity	
<i>Table 10</i>	29
Model summary table for re-entry re-injury anxiety frequency	
<i>Table 11</i>	29
ANOVA table for re-entry re-injury anxiety frequency	

<i>Table 12</i>	30
Correlation table for re-entry re-injury anxiety frequency	
<i>Table 13</i>	30
Model summary table for re-entry re-injury anxiety intensity	
<i>Table 14</i>	31
ANOVA table for re-entry re-injury anxiety intensity	
<i>Table 15</i>	31
Correlation table for re-entry re-injury anxiety intensity	

ACKNOWLEDGEMENTS

I would like to thank my dissertation supervisor, Dr. Owen Thomas for his support and guidance throughout the whole dissertation process.

I would also like to thank my mom and dad for pushing me to achieve my potential and supporting me through the whole process.

I would lastly like to thank the residents of 191 Mackintosh for the endless laughs and support in staying focused and committed over the last three years.

ABSTRACT

The aim of the present study was to identify if sources of confidence and levels of robust confidence could predict levels and frequencies of re-injury anxiety during rehabilitation and on the return to sport. Athletes who had previously sustained a sports-related injury (N=43) completed the Modified Sources of Sport Confidence Questionnaire (M-SSCQ; Magyar & Duda, 2000), the Trait Robustness of Sport Confidence Inventory (TROSCI; Beattie *et al.*, 2010) and the Re-Injury Anxiety Inventory (RIAI; Walker *et al.*, 2010). A multiple regression analysis was conducted to identify which sources of confidence and if levels of robust confidence were predictors of re-injury anxiety, during both rehabilitation and re-entry into competition phases. This analysis gave a value as to the variances the M-SSCQ and TROSCI predicted the re-injury anxiety subscales; frequency rehabilitation, intensity rehabilitation, frequency re-entry and intensity re-entry. The results of the multiple regression analysis indicated there were no significant predictors of re-injury anxiety when sources of confidence were integrated with levels of robust confidence. These findings suggest that sources of confidence and levels of robust confidence don't effect levels and frequencies of re-injury anxiety. Further research from both quantitative and qualitative approaches with a larger sample size is required to identify predictors of re-injury anxiety in both a rehabilitation and return to sport setting. This knowledge would assist coaches and rehabilitation practitioners to foster positive athlete appraisals and interventions to reduce re-injury anxiety.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The participation in competitive sport carries the inherent risk of the athlete becoming physically injured at some point in their career (Tracey, 2003) and in addition to the obvious physiological aspects of injury, there are also a number of psychological reactions that occur as a result of injury (Green & Weinberg, 2001). These psychological reactions are largely determined by one's self-appraisal of the situation (Green & Weinberg, 2001) and their actual ability to cope physically and psychologically with the injury. Furthermore, research in this area has led to the recognition that physical readiness to return to sport may not necessarily correspond with the psychological readiness to return. (Wadey & Evans, 2011).

The immediate response to injury has primarily focused on the physical site of the injury; however there have been recent investigations examining the psychosocial impact that injury can have on an athlete (Podlog *et al.*, 2011). It has been suggested that one of the major cognitive responses to injury is a decrease in one's confidence beliefs on the return to competitive sport (e.g. Bandura, 1990; Heil, 1993; Taylor & Taylor, 1997; Wiese-Bjornstal *et al.*, 1998), while it has also been suggested that specific sources of confidence may facilitate towards a successful return to sport, with others potentially debilitating (Kingston *et al.*, 2010; Vealey, 1998).

Within the context of returning to sport, one of the biggest challenges athletes face is re-injury anxiety (Evans *et al.*, 2000; Evans & Wadey, 2011; Podlog & Eklund, 2006), which has been specifically shown to influence confidence levels during the athlete's re-entry to sport (Johnston & Carroll, 1998). Christakou *et al.* (2011) and Andersen (2001) suggested that restoring confidence within injured athletes is fundamental in reducing the likelihood of re-injury anxiety, therefore facilitating a successful return to sport (Magyar & Duda, 2000; Taylor & Taylor, 1997). Despite previous research, there has been little attention investigating how athlete's sources of confidence and the robustness of confidence can affect re-injury anxiety, during rehabilitation and on the re-entry to sport. Furthermore, from a practical perspective there has been a growing need to identify which specific sources of confidence can predict the intensity and frequency of re-injury anxiety to facilitate a successful return to sport.

Therefore, the purpose of this study is to identify the sources of sport-confidence and levels of robust confidence that could predict re-injury anxiety. 43 athletes were asked to complete a series of questionnaires; the Modified version of the Sources of Sport Confidence Questionnaire (M-SSCQ; Magyar & Duda, 2000), the Trait Robustness of Sport Confidence Inventory (TROSCI; Beattie *et al.*, 2011) and the Re-Injury Anxiety Inventory (RIAI; Walker *et al.*, 2010). The data was then analysed to identify significant predictors of re-injury anxiety using a multiple regression analysis.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter opens with a review of the existent literature surrounding injury in sport and the psychological responses to athletic injury highlighting the issues athletes may encounter within this process. Secondly, the chapter analyses current sports confidence research with specific reference to sources of confidence and the impact they have on injured athletes. This chapter will also examine robust sport-confidence and the importance of confidence in relation to re-injury anxiety.

2.2 Injury in Sport

The return to sport following serious injury is seen as a stressful and traumatic period for competitive athletes (Bianco, 2001; Gould, *et al.*, 1997) with it suggested to have an intense emotional impact on athletes (Rotella & Heyman, 1986). The majority of research in this area has focused on the physical aspects of rehabilitation (Podlog *et al.*, 2010) with the importance of psychological aspects of rehabilitation largely ignored until recent work by Wadey and Evans (2011). Wadey and Evans identified a number of psychological issues deemed to be essential components throughout the stages of recovery from injury. The growing interest in the psychological aspects of returning to sport following injury is largely due to the recognition that physical and psychological readiness to return to sport may not be necessarily synonymous (Crossman, 1997; Ford & Gordon, 1998; Evans *et al.*, 2000). Furthermore, it is suggested that the number of athletes returning to sport who may be physically but not psychologically prepared to re-enter competition could be increasing (Podlog & Eklund, 2006). Psychological factors have been known to affect an athlete's coping and recovery from injury (Magyar & Duda, 2000; Wiese-Bjornstal *et al.*, 1998) and the most important factors to feature prominently in sports psychology literature appear to be confidence and re-injury anxiety (Carson & Polman, 2008; Evans *et al.*, 2000; Podlog & Eklund, 2010). For example, Magyar and Duda, (2000) suggested that confidence restoration is a significant factor in an athlete's decision to return to sport and can influence and be influenced by re-injury anxiety (Chase *et al.*, 2005; Feltz, 2007). Although confidence and re-injury anxiety have prominently featured in previous literature (Wadey & Evans, 2011; Podlog & Eklund, 2006) there appears to be a lack of research examining the relationship between confidence and re-injury anxiety.

2.3 Psychological Response to Injury

Following injury athletes experience a number of psychological responses from the onset, throughout rehabilitation, and on the return to competitive sport (Brewer *et al.*, 2002; Wiese-Bjornstal *et al.*, 1998). Wadey and Evans, (2011) suggested the manner in which these emotions are experienced changes over time generally following a temporal pattern throughout the injury process. A decrease in self-efficacy and self-confidence has been reported to be a recurring response to injury with injured athletes reported to experience a shortfall in confidence (Bandura, 1990; Evans *et al.*, 2000). Furthermore, diminished confidence has been found to be an extremely prevalent theme amongst the concept of sports-injury related psychology literature (e.g. Bandura, 1990; Evans *et al.*, 2000; Magyar & Duda, 2000; Podlog & Eklund, 2006; Wadey & Evans, 2011). Following a study of injured football players, McGowan *et al.* (1994) suggested that injured players experienced a decrease in self-worth compared to non-injured players. This decrease in self-worth was found to have a detrimental effect on both confidence and post-injury performance (Williams & Roepke, 1993; Rotella, 1985). Overall, self-confidence has been found to decline at the time the injury occurred before elevating as rehabilitation progresses (Quinn & Fallon, 1999; Podlog & Eklund, 2006) suggesting the importance of confidence restoration when returning to sport. Interestingly, it was suggested by De Heredia *et al.* (2004) that following an injury, an athlete's general mood state becomes increasingly negative until approximately halfway through the recovery period. From this moment up to when the athlete is declared medically fit, the injured athlete shows an increasingly positive mood state.

Researchers have proposed a number of theoretical models to explain the psychological response to injury and of these, the integrated model of response (Wiese-Bjornstal *et al.*, 1998) has been subjected to the most empirical research attention (Brewer, 2010). Wiese-Bjornstal *et al.* (1998) proposed that an athlete's cognitive appraisal of the injury can influence their emotional responses, subsequently impacting on their behavioural responses. This stress-process based model proposes that pre and post injury factors influence an athlete's cognitive, emotional and behavioural response to injury, examining the role of cognitive appraisal in influencing these responses (Wiese-Bjornstal *et al.*, 1998; Evans *et al.*, 2006). These appraisals ultimately influence the success of an athlete's rehabilitation programme and recovery outcome, for example, a positive appraisal towards returning to sport may encourage compliance and adherence to rehabilitation (Podlog & Eklund, 2007). Conversely, negative appraisals may lead to maladaptive behaviours that

could be detrimental to rehabilitation (Andersen, 2001) and it has been said that both behavioural and emotional responses are transient in nature (Bianco, 2001; Chan & Grossman, 1988; Quinn & Fallon, 1999; Wadey & Evans, 2011).

Three prominent phases of recovery have been acknowledged in this area; injury onset, rehabilitation and return to competitive sport (Wadey & Evans, 2011) with athletes experiencing a range of emotions depending on the injury appraisal and related stressors (Green & Weinberg, 2001; Mitchell, 2011). During the initial phase, athletes experience innumerable and intense cognitive, emotional and behavioural responses (Carson & Polman, 2008; Wadey & Evans, 2011). Some of the most intense emotions, such as shock, anger, frustration and depression, are experienced during this phase (Carson & Polman, 2008; Tracey, 2003; Gallagher & Gardner, 2007; Wadey & Evans, 2011).

Through its complex and challenging nature, the final phase of recovery has received the most extensive research attention to date (Podlog & Eklund, 2006; Wadey & Evans, 2011). Studies that have explored this stage of recovery haven tended to focus on three recurring themes; the decision to return to sport, returning to pre-injury levels of performance and re-injury anxiety, which appears to be the most significant theme in this stage (Evans *et al.*, 2000; Kvist *et al.*, 2005; Podlog & Eklund, 2007). When returning to competitive sport, athletes feel the strain with the burden of trying to return to pre-injury levels of performance, which is seen as an integral determinant of a successful return to sport (Podlog & Eklund, 2009). When athletes return to sport, it is not uncommon for them to set unrealistic expectations of their abilities (Bianco, 2001; Podlog & Eklund, 2007, 2009) which can lead to a potential decrease in self-confidence, further leading to decrements in performance, thus overall increasing the potential for actual re-injury (Johnston & Carroll, 1998; Podlog & Eklund, 2007).

2.4 Re-Injury Anxiety

Although investigations have addressed specific factors associated with different recovery outcomes, scant research has focused on athlete's perceptions of a successful return to sport from injury. This lack of research is surprising, given that for many athletes a successful return to sport may be the ultimate goal of injury recovery (Podlog & Eklund, 2009). Research has suggested that re-injury anxiety represents a psychological hindrance for otherwise healthy athletes who had received medical clearance to return to sport (Kvist *et al.*, 2005). It is a concern among some athletes and the fear of re-injury results in physiological and psychological changes that impact on performance, ultimately increasing the risk of re-injury (Heil, 1993; Podlog & Eklund, 2009). Re-injury fears are thought to be particularly salient among athletes who have a history of injury to a particular body part due to a heightened awareness of their physical weakness (Johnson & Carroll, 1998). Athletes can face a difficult time adapting to the demands of returning to sport if they have no previous injury experience as they have no prior experience of successful return to sport (Podlog & Eklund, 2007).

Fear of re-injury is the predominant emotion that athlete's experience when returning to sport from injury (Johnston & Carroll, 1998). Heil (1993) speculated that the fear of re-injury is always present, regardless of whether the athlete is injured or not. It was suggested by Taylor and Taylor (1997) that the fear of re-injury stems from a lack of trust in the injured site while this fear may increase the likelihood of actual re-injury (Heil, 1993; Taylor & Taylor, 1997). Fear of re-injury and re-injury anxiety are commonly mentioned in sport psychology literature but authors rarely define their conceptual framework (Cassidy, 2006; Kleinert, 2002). As a high degree of ambiguity remained regarding injury situations and the injury itself, a more accurate term appeared to be re-injury anxiety, rather than a fear of re-injury and in striving for conceptual clarity, the term re-injury anxiety is perceived to be more appropriate than fear of re-injury (Walker *et al.*, 2010). Despite this, the present study will adopt the terms re-injury anxiety and fear of re-injury interchangeably, both in-line with previous research and for ease of understanding.

As athletes approach the return to competitive sport, there are anxieties associated with re-injury including; concerns about an inability to perform to pre-injury standards; feelings of isolation; a lack of athletic identity and insufficient social support (Podlog *et al.*, 2010). Similar attentional and neuromuscular changes that serve to increase the chance of actual re-injury are a result of the appraisals of stress and uncertainty regarding the possibility of

re-injury or diminished post-injury performance (Podlog *et al.*, 2010). The prospect of re-injury following a lengthy rehabilitation may be a daunting one and re-injury concerns may be particularly problematic given that athletes rely on their physical capabilities to perform (Podlog & Eklund, 2010). Understanding the effects of different behavioural regulations on athlete appraisals and emotions in the return to competition may assist coaches and rehabilitation specialists in fostering positive athlete appraisals and reducing re-injury anxieties. These, in turn, may reduce actual re-injury rates. (Podlog & Eklund, 2010).

Re-injury anxiety has been reported to result in reduced rehabilitation adherence and to potentially decrease the speed of rehabilitation (Pizzari *et al.*, 2002; Heil, 1993). Andersen (2001) suggested that physically testing the limb to be one of the most important sources of respite from re-injury concerns. Numerous studies have provided support for this; for example, Cox (2002) and Johnston and Carroll (1998) suggested that testing the limb is essential in overcoming re-injury fears. Furthermore, Evans *et al.*, (2000) recommended that gaining confidence in the injured body part has shown to be a key determinant of a successful re-entry into sport. For example, in contact sports athletes re-injury fears were allayed by making testing tackles with some athletes performing well and avoiding injury upon their initial return to sport. Over time, these individuals reported that their confidence had returned, diminishing the fear of re-injury (Podlog & Eklund, 2007). A lack of confidence on re-entry to competition and the associated anxieties regarding the consequences of returning to sport from injury were perceived by athletic trainers as dysfunctional cognitions and motions displayed by rehabilitating athletes (Podlog & Eklund, 2007).

Preceding re-injury anxiety, there are a number of demands and cognitions such as pain, soreness and a lack of confidence in the injured body part, performing the same skill in the same situation in which the injury was incurred and concerns for potential setbacks (Wadey & Evans, 2000). Current research (e.g. Bianco, 2001; Evans *et al.*, 2000, Gould *et al.*, 1997; Kvist *et al.*, 2005) suggests that re-injury anxiety is a significant concern among athletes and should not be overlooked by sports medicine practitioners. Furthermore, Kingston *et al.* (2010) suggested specific sources of confidence may facilitate towards a successful return to sport and reduce the effects of re-injury anxiety.

2.5 Self- Efficacy & Self-Confidence

Through the effects it has on an athlete's behaviour and emotions, self-confidence has been found to be significantly correlated with successful sporting performance (Feltz, 2007; Vealey, 2001). High levels of confidence have also been associated with a positive influence on behaviour, whereas low levels of confidence have been associated with negative behaviours, such as depression and anxiety (Vealey, 1986; Hays *et al.*; 2007; Magyar & Duda, 2000). Unsurprisingly, this has led to self-confidence receiving considerable research attention within the sports psychology domain (Hays *et al.*, 2007, 2009; Kingston *et al.*, 2010).

Self-efficacy has been described as the belief that a certain level of performance can be attained and it is concerned with a performer's perceptions of their ability to succeed in a given situation, at a given time (Bandura, 1977; Hardy *et al.*, 1996). It is suggested that behavioural, cognitive, physiological and environmental factors interact to contribute to one's situation specific efficacy beliefs (Bandura, 1977). Bandura's (1977) theory of self-efficacy was originally developed within the framework of the social cognitive theory and suggested four primary sources of self-efficacy; performance accomplishments, vicarious experiences, verbal persuasion and emotional arousal. Although the self-efficacy theory was originally proposed in clinical psychology for the treatment of anxiety, it has since been applied to other domains of psychosocial functioning, such as health and exercise behaviour (McAuley, 1992; McAuley & Mihalko, 1998; O'Leary, 1985) and sport and motor performance (Feltz, 1988, 1994).

This model was reconceptualised by Bandura (1997) to encompass six sources that predicted efficacy beliefs; performance accomplishments, vicarious experiences, imaginal experiences, verbal persuasion, physiological states and emotional experiences (Maddux & Gosselin, 2003). Research has suggested that all six sources mediate self-confidence and self-efficacy judgments, with performance accomplishment being the strongest predictor, due to the fact they are based on an individual's mastery experiences (Bandura, 1997; Feltz *et al.*, 1979; Magyar & Duda, 2000; Feltz, 2007). Due to its ability to predict behavioural change and confidence, the self-efficacy framework (Bandura 1977, 1997) has been effective in underpinning future research into self-confidence in a variety of contexts (Bandura, 1986; Eachus & Cassidy, 1997).

Indeed, Bandura's (1997) theory of self-efficacy provided a framework which examined the sources of self-efficacy but as it was based upon general self-confidence, researchers questioned its reliability within a sporting context (Martens, 1979; Hays *et al.*, 2007). Vealey (1986) acknowledged the latter criticisms of the self-efficacy theory and proposed the first sport-specific model of confidence, which was subsequently refined (1998) which developed an inventory that operationalised confidence in the sporting environment. This reconceptualised integrative model of sport-confidence led to Vealey (1986) adopting the term sport-confidence defining it as "the beliefs in individual's capability to be successful in sport" (p.222). It succeeded in differentiating Bandura's (1997) self-efficacy theory from a concept of general self-confidence towards one based specifically on self-confidence in the sporting context (Vealey, 1986; Vealey & Chase, 2008).

The original conceptualised model of sport-confidence was split into two components; state and trait confidence, with a dispositional construct termed competitive orientation which draws on the particular type of goal that an athlete would strive towards in a competitive situation (Vealey *et al.*, 1998). Vealey's (1986) model predicted that trait confidence interacts with competitive orientation to incite state confidence in sport (Vealey, 1986, Vealey *et al.*, 1998). Limitations were discovered however, due to a limited amount of support for the proposed relationships, whereby no significant relationship was found between competitive orientation and state confidence (Martin & Gill, 1991). Indeed, Martin & Gill (1991) and Roberts & Vealey (1992) found trait confidence to be a stronger predictor of sporting behaviours than state confidence.

As a result of the previously mentioned criticisms of the first sport-confidence model, Vealey *et al.* (1998) proposed a more advanced framework with a reconceptualised sport-confidence model expanding Vealey's (1986) work by examining sources of confidence specific to the sporting environment. This led to the identification of nine sources of confidence seen as the most prominent for unique sports performers; mastery, social support, demonstration of ability, physical self-presentation, physical/mental preparation, coaches' leadership, vicarious experience, environmental comfort and situational favourableness, which were categorised into three broad domains; achievement, self-regulation and social climate (Wilson *et al.*, 2004; Vealey *et al.*, 1998; Hays *et al.*, 2007). Further investigations by Vealey *et al.* (1998) revealed mastery, social support, physical/mental preparation, demonstration of ability and physical self-presentation factors to be the most salient sources of confidence.

There were similarities between Bandura's self-efficacy model (1977, 1997) and Vealey's sport-confidence model (Vealey *et al.*, 1998) as both identified mastery and vicarious experience as significant sources of belief. Furthermore, Vealey *et al.* (1998) suggested that the sources of confidence that athletes base their beliefs on affects the stability of sport-confidence. For example, deriving confidence from controllable sources (mastery and physical/mental preparation) was proposed to facilitate stable sport-confidence more so than deriving confidence from uncontrollable sources (demonstration of ability, coaches' leadership) which can lead to unstable perceptions of sport-confidence (Kingston *et al.*, 2010). As a whole, Vealey *et al.* (1998) and Hays *et al.*, (2007) studies investigated the most significant sources of confidence for sports athletes and Kingston *et al.* (2010) suggested similarities between these studies. For example, they both identified nine sources of sport-confidence and gender variations, however, as 12 of the 14 athletes in Hays *et al.*'s (2007) study were from individual sports the results cannot be generalised to performers who compete in team sports.

Research into how self-confidence or types/sources of confidence used change over time has been examined in relation to competitive events (Vealey & Chase, 2008). Kingston *et al.* (2010) recently explored the temporal changes in the sources of sport-confidence during the build-up to an important competition, and found that the sources on which athletes placed importance changed as competition approached. Demonstration of ability, physical/mental preparation, physical self-presentation and situational favourableness changed during the build up to competition (Kingston *et al.*, 2010). The findings also suggested that a large proportion of athletes identified an uncontrollable source of confidence as the most significant. This was seen to be detrimental as Vealey *et al.* (1998) previously proposed that athletes utilising uncontrollable sources of confidence develop unstable levels of confidence. Similar to Hays *et al.*, (2007) and Vealey *et al.* (1998) there were gender differences as female athletes demonstrated a greater reliance on sources associated with mastery, physical self-presentation, social support, environmental comfort and coach's leadership than male athletes.

The sources of sport-confidence literature discussed above indicates that practitioners have to take into account various factors when identifying athlete's sources of confidence and self-efficacy beliefs (Feltz *et al.*, 2008). This includes gender differences, an athlete's individual variables and level of sport played. Appraising the stability and controllability of sources of confidence needs to be considered to facilitate the development of stable and robust sport-confidence beliefs within athletes (Kingston *et al.*, 2010).

2.6 Robust Sport-Confidence

Although a wealth of research has examined how confidence is developed, there has been limited research examining an athlete's ability to maintain self-confidence beliefs through difficult and disconfirming experiences (Beattie *et al.*, 2011). Although it lacked a clear definition, robust sport-confidence has been referred to within self-efficacy (e.g. Bandura, 1997) and sport-confidence literature (e.g. Hays *et al.*, 2007; Kingston *et al.*, 2010).

A qualitative examination by Thomas *et al.* (2011) sought to address this by capturing athlete's perspectives of robust sport-confidence in order to define and contextualise this phenomena. Data analysis procedures identified six characteristics of robust sport-confidence; multidimensional, malleable, durable, strength of belief, developed and protective. Furthermore, Thomas *et al.* (2011) defined robust sport-confidence as "A set of enduring, yet malleable positive beliefs that protect against the ongoing psychological and environmental challenges associated with competitive sport" (p.194). Although this study was exploratory in nature there was evidence indicating that when performers suffered major setbacks, such as performance or injury, this resulted in a decrease in confidence. These findings correspond with previous literature that demonstrated elite athletes levels of confidence are susceptible can fluctuate over time (Gould *et al.*, 1999; Hays *et al.*, 2009).

Hays *et al.* (2007) noted that robust sport-confidence could be developed through deriving confidence from multiple sources rather than relying on a single source. Moreover, Thomas *et al.*'s study (2011) emphasised that robust sport-confidence is made up of a strong set of beliefs which also shares similarities with the strength dimension highlighted within Bandura's self-efficacy theory (1986, 1997). The idea that robust sport-confidence is a durable and malleable construct supports Vealey's (2001) suggestion that sport-confidence contains both state and trait like properties. This suggests appears to demonstrate that robust sport-confidence also contains state and trait like properties,

which are dependent on the context in which the phenomenon is discussed (Thomas *et al.*, 2011). Overall, robust sport-confidence has been acknowledged as an key characteristic that contributes to the makeup of mentally tough athletes and that general sport-confidence beliefs may not sufficient to perform successfully (Thomas *et al.*, 2011; Beattie *et al.*, 2010; Vealey & Chase 2008).

Thomas *et al.* (2011) further proposed that robust sport-confidence could be developed through factors such as successful performances, coaching, and quality preparation. The developed characteristic highlighted that practitioners could play a vital role in supporting the development of robust sport-confidence by implying that psychological skills (self-talk, rationalisation and imagery) may assist in the development and maintenance of robust sport-confidence (Thomas *et al.*, 2011). It is also advised that practitioners identify the most salient types of confidence for the development of robust sport-confidence and to encourage athletes to develop this into a broad base of sources and types of confidence (Thomas *et al.*, 2011).

The literature discussed above highlights the importance of developing and maintaining robust confidence beliefs in athletes in order to offset the potentially damaging demands of competitive sport. Although robust sport-confidence has since been defined and contextualised, there is a dearth of research examining robust sport-confidence and aspects of injury, such as re-injury anxiety.

2.7 Relationship between Confidence and Re-Injury Anxiety

Wiese-Bjornstal *et al.* (1998) proposed that any decreases in self-confidence leads to a potential increase in re-injury anxiety, while it has been well documented that the most significant return to sport appraisal is associated with re-injury anxiety. Current sports psychology literature suggests that re-injury anxiety appears to have a negative linear relationship with levels of confidence especially during the return upon the return to competitive sport (Taylor & Taylor, 1997; Kleinert, 2002; Chase *et al.*, 2005; Tripp *et al.*, 2007). This indicates that confidence restoration is vital throughout the injury process in order to reduce the levels of re-injury anxiety ensuring that athletes are ready both physically and psychologically to return to sport. McCoy (2004) emphasised the importance of confidence within injured athletes when attempting to avoid re-injury anxiety. Bianco *et al.*, (1999) reported that athletes who were experiencing re-injury anxiety reported feelings of stress when returning to sport due to diminished self-confidence,

which may be the result of a lack of confidence in the ability to perform skills successfully (Bandura, 1997).

Johnston and Carroll (1998) investigated the relationship between confidence and re-injury anxiety when exploring the effect of social support during the rehabilitation of twelve injured athletes. It was found that injury resulted in a drop in confidence with the provision of informational and emotional support buffering negative thoughts and emotions, such as re-injury anxiety which was found to be high when returning to sport. Social support patterns were further examined before and after injury amongst mixed gender collegiate athletes by Yang *et al.* (2010) who found that social support helped decrease re-injury anxieties when returning to sport. When examining female gymnasts' fear of injury, Chase *et al.* (2005) acknowledged the importance of mastery experience when performing fearful tasks as athletes' confidence increased due to previously mastering areas of the task. High levels of re-injury anxiety were reported by those who had experienced injury during their careers when performing similar skills due to low confidence in their ability, the difficulty of returning from injury and the inability to train and perform if injured (Chase *et al.*, 2005). The identification of mastery experience as a salient source of confidence is consistent with previous research in this area (Cox, 2002; Evans *et al.*, 2000; Podlog & Eklund, 2006) in relation to regaining pre-injury levels of performance.

Despite the growing acknowledgement that re-injury anxiety is the most important factor in an injured athlete's return to sport (Wadey & Evans, 2011), there has been little theoretical research into how the sources of confidence affect re-injury anxiety during the return to sport. This is surprising given the amount of sport psychology literature that has highlighted this as a key area to consider (Johnston & Carroll, 1998; Podlog & Eklund, 2005). Therefore, the aims of the present study is to address this oversight by investigating to what extent sources of confidence and levels of robust confidence predict levels and frequencies of re-injury anxiety during rehabilitation and the re-entry to sport. Based on the findings of previous research (e.g. Kingston *et al.*, 2010; Magyar & Duda, 2000), it is hypothesised that sources of confidence derived from uncontrollable sources will be the strongest predictors of re-injury anxiety. Due to it being identified as unreliable in numerous studies, situational favourableness in particular is predicted to contribute significantly to re-injury anxiety (Vealey *et al.*, 1998; Magyar & Duda, 2000; Wilson *et al.*, 2004).

CHAPTER 3

METHODOLOGY

3.1 Research Design

The present study adopted a quantitative approach as the variables are directly measurable and easily converted into numerical form, which can then be statistically analysed to identify any sign of a relationship between them (Gratton & Jones, 2010). Questionnaires were utilised as relatively simple measurements could be assimilated from a large sample group which can then be summarised via the use of tables or charts and statistically analysed to answer a research question (Gratton & Jones, 2010). Three variables were measured within this study; sources of source confidence, levels of robust confidence and re-injury anxiety. Sources of confidence formed block one and sources of confidence integrated with levels of robust confidence formed block two of a multiple regression analysis.

3.2 Participants

Participants comprised of a purposeful sample of N=43 athletes who were specifically required to meet a number of criteria (a) be currently injured or (b) have previously suffered a sports related injury. It is recommended by Gratton and Jones (2010) that an absolute minimum of thirty participants is typically required in a sample for basic descriptive statistics. Consequently, the sample consisted of male (n=25) and female (n=18) athletes competing in individual (n=7) and team (n=36) sports with ages ranging from 19 to 26 (mean = 20.58, SD = 1.20). The competitive level of the participants is shown in Table 1. Injury severity across the sample (in terms of not participating in sport due to injury) ranged from 2 to 260 weeks (mean = 24.42, SD = 40.59).

Table 1. The competitive level of participating athletes

Competitive Level	Number of Athletes
Club	8
County	6
Regional	12
National	9
International	8

3.3 Measures

Sources of Sport Confidence Questionnaire (SSCQ)

The modified sources of sport confidence questionnaire (M-SSCQ) (Magyar and Duda, 2000) was used for this study in order to identify the sources of confidence most relied upon during the injury/rehabilitation process. The M-SSCQ is a modified version of the original Sources of Sport-Confidence Questionnaire (Vealey *et al.*, 1998) which was modified by Magyar and Duda (2000) to examine athletes' sources of confidence specific to the rehabilitation context.

The questionnaire consisted of 43 items and is made up of nine subscales with the questions examining the athlete's sources of confidence throughout rehabilitation and the return from injury. The nine subscales (sources of sport-confidence) were: mastery (e.g., "developing new skills and improving"), demonstration of ability (e.g., "demonstrating that I am better than others"), mental and physical presentation (e.g., "preparing myself physically and mentally for a situation"), physical self-presentation (e.g., "feeling good about my weight"), athletic trainer's leadership (e.g., "knowing my coach is a good leader"), social support (e.g., "receiving support and encouragement from others"), vicarious experience (e.g., "seeing a friend perform rehabilitation successfully"), environmental comfort (e.g., "performing in a rehabilitation environment that I like and which I feel comfortable"), situational favourableness (e.g., "seeing that the breaks are going my way"). The participants rated where they usually gain/gained confidence in their rehabilitation programme from on a seven point likert scale ranging from 0 (not at all) to 7 (always).

Regarding the reliability when measuring athlete's sources of confidence previous research has had mixed results. Support for the validity and reliability of the M-SSCQ was initially provided by Vealey *et al.* (1998) as a four phase study reported acceptable Cronbach's alpha for internal consistency of all nine subscales, ranging from 0.71 to 0.93, which surpassed the 0.70 criterion advocated by Nunnally (1978). However, Magyar and Duda (2000) and Wilson *et al.* (2004) found little support for situational favourableness as a source of confidence when applied in an injury setting, although internal consistency for each source of confidence again exceeded the criterion value of 0.70. Due to inconsistencies in previous research as to the reliability of the measure, Cronbach's alpha coefficient analysis was performed for the M-SSCQ as part of the present study to confirm reliability.

Trait Robustness of Sports Confidence Inventory (TROSCI)

The trait robustness of sports-confidence inventory (TROSCI) (Beattie *et al.*, 2011) was used to examine how the athlete generally feels that performance may affect their confidence. When completing this questionnaire, athletes were asked to rate the level to which they agreed or disagreed with eight statements relating to their performance. Examples of items in this framework included; “a bad result in competition has a very negative effect on my self-confidence”, “my self-confidence goes up and down a lot” and “negative feedback from others does not affect my level of self-confidence”. The extent to which they agreed or disagreed with each statement was rated on a nine point likert scale ranging from 1 (strongly disagree) to 9 (strongly agree) with 5 representing a neutral ranking. TROSCI provided a theoretically sound quantitative measure of robust/resilient confidence beliefs (Beattie *et al.*, 2011). The questionnaire also demonstrated good predictive validity where athletes with robust confidence beliefs appear to be resilient to adversity (Bandura, 1977). Beattie *et al.* (2011) stated that as athletes with high TROSC showed significantly less variance in their self-confidence prior to a competition than their low TROSC counterparts.

Items for TROSCI were generated and agreement was reached on 12 items which were retained for subsequent use in the inventory. Four items were identified as having high standardised residuals and modification indices and were removed resulting in a single-factor structure for an eight-item inventory. To further validate TROSCI, a confirmatory factor analysis (EFA) was conducted on a sample of 176 athletes with a separate sample of male athletes demonstrating good structural validity for the eight-item TROSCI. The final stage of the development of this inventory showed good test-re-test reliability of TROSCI and a moderated hierarchical regression analysis revealed that high levels of TROSC (compared to low TROSC) predicted smaller losses in self-confidence following disconfirming experiences (Beattie *et al.*, 2011).

Re-Injury Anxiety Inventory (RIAI)

The re-injury anxiety inventory (RIAI) (Walker *et al.*, 2010) was developed in order to measure athlete’s levels and frequency of re-injury anxiety. The RIA consists of 28 items comprising of two factors; re-injury anxiety regarding rehabilitation (RIA-R: 15 items) (i.e., “I feel nervous about becoming re-injured during rehabilitation” and re-injury anxiety regarding returning to training/competition (RIA-RE: 13 items) (i.e., “I feel/felt confident that I will not become re-injured during re-entry into competition”). The athletes were asked to

indicate how much they feel they experience each item on a likert scale from 0 (not at all) to 3 (very much so) for level (intensity) of re-injury anxiety and 1 (never) to 7 (all the time) for the frequency of re-injury anxiety.

Walker *et al.* (2010) reported acceptable Cronbach's alpha for internal consistency for rehabilitation re-injury anxiety (0.98) and re-entry into competition re-injury anxiety (0.96). The RIAI's validity was originally established using exploratory factor analysis (EFA) which determined construct/factorial validity with results displaying acceptable values. Modifications were then made based on grammar, and separation of items that attempted to measure both re-injury anxieties about rehabilitation and re-entry into competition. To accommodate for the absence of any anxiety, likert scales were adapted from 1-4 to 0-3 (Walker *et al.*, 2010).

3.4 Procedure

Participants who met the specific sampling criteria were contacted and asked if they wished to take part in the study and those who agreed to take part were given a participant information sheet (see appendix) and an informed consent sheet (see appendix). Throughout the process participants were reminded that participation was completely voluntary and that they reserved the right to withdraw from the study at any time if they wished. Participants were informed that any data collected would be stored securely and all rights to confidentiality would be respected with complete anonymity assured. Participants were also asked to complete a demographic information sheet which included details on their age, injury suffered and the highest level of competition they have competed at. Following this, they were then asked to complete three questionnaires; the M-SSCQ, TROSCI and RIAI which were to be completed at a time and location convenient to the participant. Upon completion of the questionnaires they were either returned to the researcher or collected by the researcher to be analysed. It was requested that the participants be as truthful and honest as possible and it was also emphasised that not all questions had to be completed if they felt uncomfortable or unwilling at any time.

3.5 Data Analysis

Scores were produced from the M-SSCQ for each of the subscales, TROSCI for trait robustness and RIAI for re-injury anxiety. Cronbach's alpha coefficients were calculated to assess the internal consistency for the nine subscales of the sources of the M-SSCQ, the eight items of the TROSCI and the intensity and frequency subscales of the RIAI. It was suggested by Coolican (2009) that scores above 0.70 were accepted as having good internal consistency, however any subscale with an alpha below 0.70 could indicate an unreliable scale. In this situation individual items were analysed to evaluate whether they were reducing the overall reliability of the subscale and if this was the case then the item was removed to increase the whole subscale reliability. If items were removed, the Cronbach's alpha were recalculated to ensure that the item removed improved the overall reliability of the subscale.

Multiple regression analysis was used to identify if specific sources of confidence or levels of robust sport-confidence could predict high or low levels and frequencies of re-injury anxiety. Multiple regression was adopted as it seeks to predict an outcome from several predictors and it is used to compare the predictive powers of the predictor variables in question (Field, 2009; Coolican, 2009). This analysis allows the study to understand if the M-SSCQ and TROSCI could predict re-injury anxiety subscales and which specific sources of confidence could predict different subscales of re-injury anxiety. A predictive model is fitted to the data to assess how much change in the dependent variable (re-injury anxiety) is accounted for by the independent variables (sources of confidence and trait robustness) before checking for any statistical significance (represented with a value of $p > 0.5$). In accordance with Pallant (2008) if the sources reported a value less than $p > 0.5$ this showed there to be a significant amount of variance on re-injury anxiety. Prior to conducting the analysis underlying assumptions of statistical tests (e.g., linearity, normality, independent errors and multicollinearity) were checked for accuracy to ensure results were as accurate as possible. The model for a sample can be accurately applied to the population of interest when these basic assumptions are met (Field, 2009). All statistical tests were conducted using statistical software; IBM SPSS statistics for windows, version 20.

CHAPTER 4

RESULTS

The following chapter provides the internal consistency results for the subscales of the M-SSCQ, TROSCI and the RIAI, the confirmation of underlying assumptions and the results of the multiple regression analysis.

4.1 Scale Internal Reliability

Internal consistency scores for the M-SSCQ subscales, the TROSCI framework and the subscales of the RIAI are presented in Table 2. All of the subscales presented acceptable internal consistency scores with Cronbach's alpha ranging from 0.70 to 0.92 with the exception of environmental comfort (alpha 0.69) and situational favourableness (alpha 0.67). Although environmental comfort and situational favourableness fell below the acceptable Cronbach's alpha of 0.69 and 0.67 respectively, it was deemed adequate to retain these in the present study based on previous research acknowledging the importance of these variables on confidence beliefs (Hays *et al.*, 2007; Magyar & Duda, 2000; Podlog & Eklund, 2006; Vealey *et al.*, 1998). Internal consistency scores for the TROSCI presented an acceptable Cronbach's alpha of 0.77 and the RIAI subscales presented accepted Cronbach's alpha scores ranging from 0.88 to 0.91.

Table 2. Co-efficient alpha for the subscales of the M-SSCQ, TROSCI framework and subscales of the RIAI

Source of Sport-Confidence	Cronbach's Alpha (α)
Mastery	0.83
Demonstration of Ability	0.85
Mental and Physical Preparation	0.87
Physical Self-Perception	0.92
Social Support	0.86
Vicarious Experience	0.81
Environmental Comfort	0.69
Situational Favourableness	0.67
Leadership	0.81
Trait Robustness	0.77
Rehabilitation Frequency	0.89
Rehabilitation Intensity	0.88
Return to Sport Intensity	0.91
Return to Sport Frequency	0.91

4.2 Means and Standard Deviations

Means and standard deviations for the subscales of the M-SSCQ, TROSCI and RIAI are shown in Table 3. Social support was found to have the highest mean score (5.33) when athletes stated their sources of confidence in an injury environment. In contrast, demonstration of ability had the lowest mean score (3.83) highlighting that athletes did not rate this as an important source of confidence in the present study.

Table 3. Descriptive Statistics of the M-SSCQ, TROSCI and RIAI Subscales

Source of Sport- Confidence	Mean	Standard Deviation
Mastery	4.99	0.94
Demonstration of Ability	3.83	1.26
Mental and Physical Preparation	4.87	0.94
Physical Self-Perception	4.62	1.73
Social Support	5.33	0.88
Vicarious Experience	4.15	1.15
Environmental Comfort	4.21	1.18
Situational Favourableness	4.31	1.10
Leadership	5.31	0.89
Trait Robustness	32.70	8.48
Rehabilitation Intensity	18.21	7.34
Rehabilitation Frequency	42.74	13.29
Re-entry Intensity	26.98	9.20
Re-entry Frequency	58.74	17.45

4.3 Confirming Underlying Assumptions

Prior to performing the multiple regression analysis, all underlying assumptions were tested. Firstly, the assumption of normality was tested to measure the distribution variance from the sample. Z-scores for skewness and kurtosis were calculated for each of the nine subscales from the M-SSCQ and for trait robustness from the TROSCI. Eight out of the ten variables successfully achieved z-scores of 1.96 with leadership achieving skewness and kurtosis z-scores of -2.30 and 2.79 and physical/self-preparation achieved a skewness z-score of -3.12. Although these variables failed to achieve a z-score of 1.96, they were still

below the upper threshold of 3.29 as stated by Field (2009), therefore indicating that the assumption of normality can be confirmed.

The assumption of no perfect multicollinearity between the independent variables (sources of confidence and trait robustness) was confirmed as they had acceptable p values (Tolerance $>.10$ and VIF <10.00), which indicated no high correlations between the outcome variables (re-injury anxiety levels and frequency) (Osborne & Waters, 2002). Although mental and physical preparation was found to have a tolerance value of 0.12 and a VIF value of 8.32 it was kept in the present study as when this variable was removed it had no impact on the R^2 value. The Durbin-Watson test of independence showed values of 1.73 for rehabilitation re-injury anxiety frequency, 2.24 for rehabilitation re-injury anxiety intensity, 2.72 for re-entry re-injury anxiety frequency and 2.23 for re-entry re-injury anxiety intensity. As these values were all above 1 and below 3, the assumption of independence can be assumed (Field, 2009). Field went on to state that values below 2 showed there to be a positive correlation between adjacent residuals and values above 2 indicated a negative correlation. A Kolmogorov-Smirnov test was conducted to compare the scores in the sample to a normally distributed set of scores with the same mean and standard deviation (Field, 2009). This test indicated values of 0.20 for rehabilitation re-injury anxiety frequency, 0.16 for re-entry re-injury anxiety frequency, 0.06 for rehabilitation re-injury anxiety intensity and 0.20 for re-entry re-injury anxiety intensity. These values indicated non-significant values ($p > 0.05$) which meant that the distribution of the sample was not significantly different from a normal distribution.

4.4 Multiple Regression Analysis

A multiple regression analysis was performed to examine the relationship between the independent variables (sources of confidence and trait robustness) and the dependent variable (re-injury anxiety). The multiple regression involved two blocks; block one contained the sources of confidence and block two contained the sources of confidence integrated with levels of robust confidence to calculate the variance each block had on re-injury anxiety during rehabilitation and the re-entry to sport. This approach was adopted as it allows one to make a prediction of the dependent variable based on two or more independent variables as well as the relative importance of the various independent variables (Kerr *et al.*, 2002).

4.4.1 M-SSCQ and TROSCI on Rehabilitation Re-Injury Anxiety Frequency

Results of the multiple regression suggest that 21% ($R^2 .21$) of the variance in rehabilitation re-injury anxiety frequency can be predicted by the sources of confidence. When trait robustness was added to this model, the variance increased to 24% suggesting that trait robustness accounts for 3% of the variance (Table 4). The proportion of variance was not significant at $p < 0.05$ (Table 5). Table 6 indicates the correlations between the independent variables and the dependent variable and suggests that social support had the highest predictive ability of re-injury anxiety frequency in the rehabilitation stage ($r = 0.36$). It also indicates trait robustness has an inverse relationship with rehabilitation re-injury anxiety frequency, suggesting that as trait robustness levels increase, re-injury anxiety frequency decreases.

Table 4. Model Summary for rehabilitation re-injury anxiety frequency

Model	R Square	R Square Change	F Change	Sig. F Change	Durbin-Watson
1	0.21	0.21	0.96	0.50	
2	0.24	0.03	1.35	0.25	1.74

Table 5. ANOVA table for rehabilitation re-injury anxiety frequency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1530.38	9	170.04	0.95	0.50 ^b
	Residual	5883.80	33	178.30		
	Total	7414.19	42			
2	Regression	1768.98	10	176.90	1.00	0.46 ^c
	Residual	5645.21	32	176.41		
	Total	7414.19	42			

Table 6. Correlation table for re-injury anxiety frequency

	Rehabilitation Frequency
Mastery	0.25
Demonstration of Ability	0.03
Mental/Physical Preparation	0.35
Physical Self-Presentation	0.17
Social Support	0.36
Vicarious Experience	0.18
Environmental Comfort	0.24
Situational Favourableness	0.33
Leadership	0.14
Trait Robustness	-0.22

4.4.2 M-SSCQ and TROSCI on Rehabilitation Re-Injury Anxiety Intensity

Results of the multiple regression suggest that 9% (R^2 0.09) of the variance in rehabilitation re-injury anxiety intensity can be predicted by the sources of confidence. When trait robustness is added to this, the variance increases to 13% suggesting that trait robustness accounts for 4% of the variance (Table 7). The proportion of variance is not significant at $p < 0.05$ (Table 8). Table 9 indicates the correlations between the independent variables and the dependent variable and suggests that environmental comfort to have the highest predictive ability of re-injury anxiety intensity in the rehabilitation stage ($r = 0.24$). It also indicates trait robustness has an inverse relationship with rehabilitation re-injury anxiety intensity, suggesting that as trait robustness levels increase, re-injury anxiety levels decrease.

Table 7. Model Summary table for rehabilitation re-injury anxiety intensity

Model	R Square	R Square Change	F Change	Sig. F Change	Durbin-Watson
1	0.94	0.09	0.38	0.94	
2	0.13	0.03	1.25	0.27	2.24

Table 8. ANOVA table for rehabilitation re-injury anxiety intensity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	212.42	9	23.60	0.38	0.94 ^b
	Residual	2052.70	33	62.20		
	Total	2265.12	42			
2	Regression	289.66	10	28.97	0.47	0.90 ^c
	Residual	1975.45	32	61.73		
	Total	2265.12	42			

Table 9. Correlation table for rehabilitation re-injury anxiety intensity

	Rehabilitation Intensity
Mastery	0.21
Demonstration of Ability	0.12
Mental/Physical Preparation	0.18
Physical Self-Presentation	0.21
Social Support	0.18
Vicarious Experience	0.17
Environmental Comfort	0.24
Situational Favourableness	0.22
Leadership	0.17
Trait Robustness	-0.24

4.4.3 M-SSCQ and TROSCI on Re-entry Re-Injury Anxiety Frequency

Results of the multiple regression suggest that 33% ($R^2 .33$) of the variance in re-entry re-injury anxiety frequency can be explained by the sources of confidence. When trait robustness is added to this, the variance increase to 36% suggesting that trait robustness accounts for roughly 3% of the variance (Table 10). The proportion of variance is significant at $p < 0.5$ (Table 11). Table 12 indicates the correlations between the independent variables and the dependent variable and suggests that social support has the highest predictive ability of re-injury anxiety in the re-entry stage ($r = 0.50$). It also suggests trait robustness has an inverse relationship with rehabilitation re-injury anxiety frequency, suggesting that as trait robustness levels increase, re-injury anxiety levels decrease.

Table 10. Model summary table for re-entry re-injury anxiety frequency

Model	R Square	R Square Change	F Change	Sig. F Change	Durbin-Watson
1	0.33	0.33	1.84	0.10	
2	0.36	0.02	0.86	0.36	2.18

Table 11. ANOVA table for re-entry re-injury anxiety frequency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4275.28	9	475.03	1.84	0.10 ^b
	Residual	8516.91	33	258.09		
	Total	12792.19	42			
2	Regression	4496.80	10	449.68	1.74	0.12 ^c
	Residual	8295.39	32	259.23		
	Total	12792.19	42			

Table 12. Correlation table for re-entry re-injury anxiety frequency

	Re-Entry Frequency
Mastery	0.41
Demonstration of Ability	0.07
Mental/Physical Preparation	0.50
Physical Self-Presentation	0.08
Social Support	0.49
Vicarious Experience	0.25
Environmental Comfort	0.27
Situational Favourableness	0.36
Leadership	0.46
Trait Robustness	-0.24

4.4.4 M-SSCQ and TROSCI on Re-entry Re-Injury Anxiety Intensity

Results of the multiple regression suggest that 34% ($R^2 .34$) of the variance in re-entry re-injury anxiety intensity can be explained by the sources of confidence. When trait robustness is added to this, the variance increases to 36% suggesting that trait robustness accounts for roughly 2% of the variance (Table 13). The proportion of variance was significant at $p < 0.5$ (Table 14). Table 15 indicates the correlations between the independent variables and the dependent variable and suggests that mental/physical preparation has the highest predictive ability of re-injury anxiety in the rehabilitation stage ($r = 0.36$). It also indicated that trait robustness has an inverse relationship with rehabilitation re-injury anxiety intensity, suggesting that as trait robustness levels increase, re-injury anxiety levels decrease.

Table 13. Model summary table for re-entry re-injury anxiety intensity

Model	R Square	R Square Change	F Change	Sig. F Change	Durbin-Watson
1	0.34	0.34	1.88	0.09	
2	0.36	0.03	1.26	0.27	2.23

Table 14. ANOVA table for re-entry re-injury anxiety intensity

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1202.26	9	133.59	1.88	0.09 ^b
	Residual	2350.71	33	71.23		
	Total	3552.98	42			
2	Regression	1291.32	10	129.13	1.83	0.09 ^c
	Residual	2261.69	32	70.68		
	Total	3552.98	42			

Table 15. Correlation table for re-entry re-injury anxiety intensity

	Re-Entry Intensity
Mastery	0.45
Demonstration of Ability	0.12
Mental/Physical Preparation	0.52
Physical Self-Presentation	0.12
Social Support	0.47
Vicarious Experience	0.27
Environmental Comfort	0.30
Situational Favourableness	0.42
Leadership	0.47
Trait Robustness	-0.25

CHAPTER 5

DISCUSSION

5.1 Introduction

This study intended to identify predictors of re-injury anxiety frequency and intensity during the rehabilitation and re-entry phase. It was reported that none of the predictors significantly predicted the dependent variables. This chapter provides a discussion of the results obtained before discussing the practical implications, the strengths and limitations of the present study and recommendations for future research leading on to an overall conclusion of the study.

5.2 Sources of Confidence and Re-Injury Anxiety

The results from the present study indicated that none of the collective models of sources of confidence nor the integration of robust sport-confidence significantly predicted re-injury anxiety during the rehabilitation and re-entry to sport phases. This suggests that neither sources of confidence, nor levels of robust confidence hold any predictive value throughout rehabilitation and re-entry into sport. This contradicts previous research, for example, an action research study by Evans *et al.* (2000) found that confidence became a major component during the re-entry to sport phase and was identified by players as key to their successful return to playing. This is further supported by Podlog and Eklund (2007) and Grove and Gordon's (1995) contention that confidence is vital among athletes returning to sport. Indeed, there has been a wealth of research into sports related injuries that has consistently highlighted the importance of confidence restoration in reducing re-injury anxiety (e.g. McCloy, 2004; Taylor & Taylor, 1997; Kleinert, 2002; Chase *et al.*, 2005; Tripp *et al.*, 2007).

That said, findings from this study appear to contradict this view by suggesting that belief based aspects are not actually that important for injured athletes to work on. This implies that other factors contribute to levels and frequencies of re-injury anxiety and in a study examining female gymnasts' fear of injury, Chase *et al.* (2005) suggested there were eight general themes as to the reasons for fear of injury in the gymnasts. Difficulty returning from injury (25%); unable to participate (18%); fear of serious injury (15%); negative emotional responses (15%); undescribed fear (9%); fear of failure (9%); pain (6%) and fear of death (3%) were all identified as salient sources of injury. It can be suggested that the theme "difficulty returning from injury" can be interpreted as re-injury anxiety and this was defined as the consequences the gymnast must deal with when injured, such as missed practices and competitions. It was also suggested that the gymnasts found it hard to take time off from practice to recover from an injury because of lost skills, low confidence due to

lack of participation and the feeling of physically “starting from scratch”, which could all be perceived as anxieties when returning to sport from injury. (Chase *et al.*, 2005). Difficulty returning from injury accounted for 25% of the responses from gymnasts in this study, however these findings should be approached with caution as they not explicitly linked to re-injury anxiety, but rather the fear of injury.

Findings from the present study suggested that sources of confidence and levels of robust confidence predicted 24% of the variance in the frequency of re-injury anxiety during rehabilitation. As previously mentioned in the literature, it is during this phase that injured athletes face the greatest number of challenges as they try to expedite their recovery and successful return to competitive sport (Wadey & Evans, 2011). Besides sources of confidence and levels of robust confidence, it can be suggested that challenges associated with physical incapacitation, isolation, contractual and financial issues, perceptions of control and autonomy, slowness of progress and setbacks, and the monotony of rehabilitation activities could all contribute to re-injury anxiety during rehabilitation (Wadey & Evans, 2011). However, this should be approached with caution as these variables were not examined in the present study and further work is needed to clarify if these sources contribute to re-injury anxiety.

During the re-entry to sport phase, this study suggested that sources of confidence and levels of robust confidence predicted 36% of the variance in re-injury anxiety. This is considerably more than during the rehabilitation phase and Wadey and Evans (2011) proposed that several factors precede re-injury anxiety during this phase. It could be suggested that a lack of confidence in the injured body part, pain and soreness at the site of injury, performing the same skill in the same situation the injury was incurred, concerns for potential setbacks, and the physical demands of training and competition all contribute to an athlete’s levels and frequency of re-injury anxiety on the re-entry to sport (e.g. Bianco *et al.*, 1999; Cox, 2002; Podlog & Eklund, 2006).

Furthermore, Canadian national team skiers in Bianco’s (2001) study reported that returning to competition to avoid losing a spot on the team and through pressure from coaches went on to suffer further injuries which were then attributed to returning prematurely. As with the rehabilitation phase, this should be approached with caution as these variables were not examined in the present study and further work is needed to clarify if these sources contribute to re-injury anxiety.

5.3 Strengths and Limitations

The present study had a number of strengths and limitations and in relation to the strengths, the study addressed an area of sport psychology that had previously received little research attention. The majority of previous research has focused upon self-confidence and self-efficacy during injury (Bandura, 1997; Vealey *et al.*, 1998; Hays *et al.*, 2007) rather than other relevant factors such as re-injury anxiety. A major strength of this study was the M-SSCQ being context specific as it was modified by Magyar and Duda (2000) to be specific to the rehabilitation context. The RIAI was an anxiety measure that was also context specific as participants were asked a number of statements about re-injury worries that they experienced during rehabilitation and return to competition.

A second strength of the present study was that it investigated robust sport-confidence when predicting levels of re-injury anxiety, which to date has not attracted much attention in sport psychology literature. That said, the use of TROSCI in this study could be questioned as it only involved eight items asking participants to describe how they generally felt about their confidence without making specific reference to rehabilitation or returning to sport, unlike the M-SSCQ and RIAI. Moreover, Beattie *et al.* (2011) identified that the evaluation of disconfirming experiences as a limitation as athletes rated their individual performance on a single item scale. In line with Beattie *et al.* future research should include a wider range of adversity experiences and a more detailed assessment of that adversity.

A further strength was that the present study focused on both phases of an athlete's recovery from injury; rehabilitation and the return to sport phase. Additionally, the present study examines the total variance of re-injury anxiety in the aforementioned phases as a result of an athlete's sources of confidence and levels of robust confidence. This is unlike previous research which has only focused on the importance of the sources of confidence. Therefore, the present study is likely to increase the depth of knowledge into what is a limited research area of sport-psychology; re-injury anxiety.

Although the present study attempted to address a narrow area of sport psychology literature, it carried with it several limitations. Firstly, questions have been raised about the psychometric integrity of the M-SSCQ due to two of the nine sources of confidence failing to obtain Cronbach's alpha ratings of 0.70. Both environmental comfort and situational favourableness were retained in the study with alphas of 0.69 and 0.67 respectively which

could have had a knock-on effect on the overall reliability of the present study. However, these ratings were deemed adequate enough to be retained in the M-SSCQ, which is an issue due to Nunnally (1978) stating that any subscale that fails to meet the 0.70 alpha criterion is deemed unacceptable. Furthermore, the two subscales have been deemed to be relevant to confidence beliefs in previous research (Hays *et al.*, 2007; Magyar & Duda, 2000; Podlog & Eklund, 2006; Vealey *et al.*, 1998) justifying the retaining of each subscale in the M-SSCQ for the present study.

The sample in the present study can be viewed as both a strength and a limitation. A strength of the sample is that it contained athletes from a variety of sports, with a variety of injuries and from a variety of different levels of competition. However the sample is also recognised as a limitation due to its relatively small size. For the number of variables examined this study ($n=10$), Green (1991) proposed that a minimum sample size of 130 should have been used to examine both the overall fit of the regression model and the contribution of the individual predictors. This is a significantly bigger sample than the 43 athletes used in the present study. However, the sample of athletes used in the study was heterogeneous and as a result, the findings from this study can be generalisable to a wider population.

A further limitation for the present study was the inclusion criteria which required the athlete to be currently injured or have previously suffered a sport-related injury without any specific requirements or time frames. This resulted in an unbalanced mixture of athletes as only two athletes were currently injured at the time and some had suffered their injury over three years prior to participation in the study. Inclusion criteria with a specific time frame would have minimised the potential confounding effects of memory decay on the participant's responses (Jenkins *et al.*, 2002; Altmann & Gray, 2002; Coolican, 2009) increasing the reliability and validity of the results. A final limitation of the present study was the type of questionnaire used to gather data as they all involved the use of likert scales. Individuals are likely to interpret each part of the scale differently which decreases the accuracy of the results obtained, due to the subjective nature of this type of scale.

5.4 Practical Implications

In contrast to previous research, this study suggested that some sources of confidence are not as significant in predicting re-injury anxiety as previously suggested. For example, demonstration of ability, mental and physical preparation and mastery have been consistently reported as extremely important sources of confidence that decrease the negative emotions associated with injury (Evans *et al.*, 2000; Magyar & Duda, 2000). The present study contradicts these findings and as a result practitioners should be careful when advocating these sources of confidence to injured athletes in order to off-set re-injury anxiety. In line with Wadey and Evans (2011), it is suggested that practitioners working with injured athletes should be encouraged to do what works for them and for some athletes it may mean withdrawing from all contact with their sport, maintaining social contact, and for others continued and full integration into the sporting environment. Furthermore, Wadey and Evans (2011) also suggested that during the early part of rehabilitation, the provision of emotional support and tangible assistance is essential to offset the detrimental effects of physical incapacitation and lack of mobility which in turn will reduce re-injury anxiety.

The findings of the present study also suggest that athletes who use situational favourableness as a source of confidence are more likely to experience rehabilitation re-injury anxiety, and athletes who use physical self-presentation are more likely to experience return to sport re-injury anxiety. In addition to this, athletes who derive confidence from mental/physical preparation are less likely to experience rehabilitation re-injury anxiety and athletes derive confidence from mastery are less likely to experience return to sport re-injury anxiety frequency. Therefore, it is advisable for coaches and practitioners to be made aware of the particular sources of confidence which may contribute to re-injury anxiety, and the possible influences they may have.

Although Thomas *et al.*'s (2011) study did not include injured athletes it can still be suggested that factors linked to performance accomplishments, mental and physical preparation, social support and psychological skills helped develop more breadth and strength of sport-confidence beliefs. This could be applied to an injury setting and interventions should include these factors in order to assist athletes maintain their types of sport-confidence and facilitate the protective nature of robust-confidence (Thomas *et al.*, 2011). In line with Bull *et al.* (2005) and Hays *et al.* (2009) an effective approach to working with injured athletes and athletes returning to sport would be for practitioners to

focus on how strong and broad confidence can be made, rather than the traditional approach of how high confidence levels can be. This should be approached with caution until future research of trait robustness in a rehabilitation context is conducted.

5.5 Recommendations for Future Research

A number of recommendations for future research have become apparent based on results of the present study. For example, it could be beneficial for future research to look at exploring the effect that competitive level has on the relationship between sources of confidence and re-injury anxiety. This is due to participants in the current study representing a variety of levels of competition whilst research has suggested that different competitive levels can affect the importance athletes place upon their sources of confidence (Hays *et al.*, 2007; Kingston *et al.*, 2010). Therefore, future research should aim to examine the effects level of competition has on the relationship between sources of confidence and re-injury anxiety throughout the injury process.

The present study also included both genders from a variety of sport types, however gender differences were not examined. Due to existing knowledge suggesting gender plays a crucial role in the different sources of confidence athletes' use (Kingston *et al.*, 2010; Vealey *et al.*, 1998), it is recommended that future research identifies whether gender differences affect sources of confidence throughout the injury process.

This study involved examining a variety of injury types and severities with Udry and Andersen (2002) suggesting the importance of injury type and severity when examining athletes' psychological responses. Consequently, an area for future research would be to examine the effects of injury type and severity on the relationship between the sources of confidence and re-injury anxiety. Evans and Hardy (1995) proposed that injury severity is a significant determinant of an athlete's emotional response to injury. Furthermore, Chase *et al.* (2005) reported more severe injuries are associated with a greater fear of re-injury and diminished confidence when returning to sport. Therefore, it may be useful to examine whether the relationship between sources of confidence and re-injury anxiety is influenced by injury severity or not.

A further area requiring further examination is the importance of situational favourableness as a source of confidence due to the results of this study and the consistent lack of support it has received from previous studies (Hays *et al.*, 2007; Magyar & Duda, 2000; Wilson *et al.*, 2004). There is little evidence to suggest situational favourableness is a valid source of confidence due to it being removed from numerous studies due to its lack of insignificance to athletes. It would also be advisable for future research of this nature to modify the TROSCI to examine levels of robust confidence specific to the rehabilitation context.

It may be useful for future research of this type to implement the Injury-Psychological Readiness to Return to Sport (I-PRRS) Scale (Glazer, 2009) as it assesses an athlete's psychological readiness to return to sport participation after injury. The I-PRRS is a six-item scale that measures an athletes' confidence after injury, before practice, before competition and after competition and includes items such as "my confidence in the injured body part to handle the demands of the situation is...", "my confidence not to concentrate on the injury is..." and "my confidence not to play without pain is...". Athletes are asked to rate their confidence to return to sport on a scale from 0 – 100; 0 = no confidence at all, 50 = moderate confidence and 100 = complete confidence. The completion of this questionnaire alongside the M-SSCQ, a modified TROSCI and RIAI and would give practitioners and sport psychologists a detailed insight into an athlete's confidence levels when returning to sport in order to reduce/eradicate any re-injury anxiety, facilitating a successful return to sport where an athlete is both physically and psychologically prepared.

5.6 Conclusion

In conclusion, the present study aimed to identify if sources of confidence and levels of robust confidence could significantly predict re-injury anxiety. Results of the multiple regression analysis identified there were no significant predictors of re-injury anxiety during both rehabilitation and return to sport. From an applied perspective, it is suggested that practitioners working with injured athletes should be encouraged to focus on what works best for the athlete. It could also be suggested that there is more to re-injury anxiety than just sources of confidence and levels of robust confidence. Practitioners should also be aware of other factors that could contribute to re-injury anxiety such as pressure to return to pre-injury levels of performance, pressure to return prematurely, slowness of progress and performing the same skill in the same situation in which the injury was incurred.

Consistent with previous research, athletes should avoid deriving confidence from uncontrollable sources of confidence (e.g. situational favourableness and leadership) as they contributed to most to re-injury anxiety in both phases. Athletes should be encouraged to derive confidence from mental/physical preparation to reduce the frequency of re-injury anxiety in the rehabilitation phase and mastery experiences in the re-entry to sport phase. The findings from this study provide additional knowledge to an area of sport psychology that has previously received little attention, enhancing the practitioner's knowledge of the predictors of re-injury anxiety. However, due to there being no significant predictors, these results should be interpreted and applied with caution, warranting the need for future research.

It can be concluded that situational favourableness can increase re-injury anxiety during the rehabilitation and re-entry phase respectively; whereas social support can decrease the intensity of re-injury anxiety in the rehabilitation phase. Overall, the present study addressed an important gap within sport-psychology literature; sources of confidence and robust confidence as predictors of re-injury anxiety. However, future research from a qualitative and quantitative approach should be conducted to further identify predictors of re-injury anxiety and to build on the present study.

REFERENCE LIST

Altmann, E. and Gray, W. (2002). Forgetting to remember: The functional relationship of Decay and Interference. *Psychological Science*, 13, 1.

Andersen, M.B. (2001). Returning to action and the prevention of future injury. In J. Crossman (Ed.), *Coping with sports injuries: psychological strategies for rehabilitation* (pp.162-173). Melbourne: Oxford University Press.

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioural Change. *Psychological Review*, 84(2), p191-215.

Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. *Journal of applied sport psychology*, 2(2), p128-163.

Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W.H. Freeman.

Beattie, S., Hardy, L., Savage, J., Woodman, T & Callow, N. (2011). Development and validation of a trait measure of robustness of self-confidence. *Psychology of Sport and Exercise*. 12(1), p184-191.

Bianco, T. (2001). Social support and recovery from sport injury: Elite skiers share their experiences. *Research quarterly for exercise and sport*, 72 (4), p376-388.

Bianco, T., Malo, S., & Orlick, T. (1999). Sport injury and illness: elite skiers describe their experiences. *Research Quarterly for Exercise and Sport*, 70(2), p157-169.

Brewer, B. W. (2010). The role of psychological factors in sport injury rehabilitation outcomes. *International Review of Sport and Exercise Psychology*, 3(1), p40-61.

Brewer, B.W., Andersen, M.B. & Van Raalte, J.L. (2002). Psychological aspects of sport injury rehabilitation: Toward a biopsychosocial approach. In: D. Mostofsky & L. Zaichkowsky (Eds.), *Medical aspects of sport and exercise* (pp. 41-57). Morgantown, WV: Fitness Information Technology.

- Bull, S. J., Shambrook, C. J., James, W., & Brooks, J. E. (2005). Towards an understanding of mental toughness in elite English cricketers. *Journal of Applied Sport Psychology*, 17, p209–227.
- Carson, F. and Polman, R. (2008). ACL injury rehabilitation: A Psychological case study of a professional rugby union player. *Journal of Clinical Sport Psychology*, 2, p71-90.
- Cassidy, C.M. (2006). Understanding sport-injury anxiety. *Athletic Therapy Today*. 11(4), p57-58.
- Chan, C.S. & Grossman, H.Y. (1988). Psychological effects of running loss on consistent runners. *Perceptual and Motor skills*, 66, p875-883.
- Chase, M., Magyar, M., and Drake, B.M. (2005). Fear of injury in gymnastics, self-efficacy and psychological strategies to keep on tumbling. *Journal of Sports Sciences*, 23(5), p465-475.
- Christakou, A., Zervas, Y., Stavrou, N. A. & Psychountaki, M. (2011). Development and validation of the causes of re-injury worry questionnaire. *Psychology, Health and Medicine*, 16(1), p94-114.
- Coolican, H. (2009). *Research Methods and Statistics in Psychology* (5th ed.). East Sussex: Psychology Press.
- Cox, R. (2002). The psychological rehabilitation of a severely injured rugby player. In I. Cockerill (Eds.), *Solutions in sport psychology* (pp.159-172). London: Thomson Learning.
- Crossman, J. (1997). Psychological rehabilitation from sports injuries. *Sports Medicine*, 23(5), p333-339.
- De Heredia, R.A.S., Muñoz, A.R. & Artaza, J.L. (2004). The Effect of Psychological Response on Recovery of Sport Injury. *Research in Sports Medicine*. 12(1), p15-31.

Eachus, P., & Cassidy, S. (1997). Self-efficacy, locus of control and styles of learning as contributing factors in the academic performance of student health professionals. *Proceedings of the First Regional Congress of Psychology for Professionals in America*. Mexico.

Evans, L., & Hardy, L. (1995). Sport injury and grief responses: a review. *Journal of Sport and Exercise Psychology*, 17(3), 227-245.

Evans, L., Hardy, L. & Fleming, S. (2000). Intervention strategies with injured athletes: an action research study. *The Sport Psychologist*, 14, 188-206.

Evans, L., Mitchell, I., and Jones, S. (2006). Psychological responses to sport injury: A review of current research. In S. Hanton & S.D. Mellalieu (Eds.), *Literature reviews in sport psychology* (pp.289-319). New York: Nova Science.

Feltz, D. L. (1988). Self-confidence and sports performance. In: K.B. Pandolf (Ed.), *Exercise and sport sciences reviews* (pp. 423-456). New York: Macmillan.

Feltz, D.L. (1994). Self-confidence and performance. In D. Druckman & R.A. Bjork (Eds.), *Learning, remembering, believing: Enhancing human performance* (pp. 173-206). Washington, DC: National Academy Press.

Feltz, D. L. (2007). Self-confidence and sports performance. In: D. Smith & M. Bar-Eli (Eds.), *Essential readings in sport and exercise psychology* (pp. 278–294). Champaign, IL: Human Kinetics.

Feltz, D., Short, S. E. and Sullivan, P. (2008). Self-efficacy in sport: Research and strategies for working with athletes, teams and coaches. *International Journal of Sports Science and Coaching*, 3(2), p293-295.

Feltz, D. L., Short, S. E. and Sullivan, P. J. (2008). *Self-efficacy in sport*. Champaign, IL: Human Kinetics.

Feltz, D., Landers, D.M., and Raeder, U. (1979). Enhancing self-efficacy in high avoidance motor tasks: A comparison of modelling techniques. *Journal of Sports Psychology*, 1, p112-122.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage Publications.

Ford, I. W., & Gordon, S. (1998). Perspectives of sport trainers and athletic therapists on the psychological content of their practice and training. *Journal of Sport Rehabilitation*, 7, p79-94.

Gallagher, B.V., & Gardner, F.L. (2007). An examination of the relationship between early maladaptive schemas, coping, and emotional response to athletic injury. *Journal of Clinical Sport Psychology*, 1(1), p47–67.

Gould, D., Udry, E., Bridges, D., Beck, L. and Others. (1997). Stress sources encountered when rehabilitating from season-ending ski injuries. *Sport Psychologist*, 11 (4), p. 361-378.

Gould, D. R., Guinan, D., Greenleaf, C., Medbury, R., & Peterson, K. (1999). Factors affecting Olympic performance: Perceptions of athletes and coaches from more and less successful teams. *The Sport Psychologist*, 13, p371–394.

Gratton, C., & Jones, I. (2010). *Research Methods for Sports Studies* (2nd ed.). Oxon: Routledge.

Green, S.B. (1991). How many subjects does it take to do a regression analysis? *Multivariate Behavioural Research*, 26, p499-510.

Green, S., and Weinberg, R. (2001). Relationships among athletic identity, coping skills, social support, and the psychological impact of injury in recreational participants. *Journal of Applied Sport Psychology*, 13, p40-59.

Hays, K., Maynard, I., Thomas, O., & Bawden, M. (2007). Source and types of confidence identified by world class sport performers. *Journal of Applied Sport Psychology*, 19, p434-456.

- Hays, K., Thomas, O., Maynard, I. and Bawden, M. (2009). The role of confidence in world-class sport performance. *Journal of Sports Sciences*, 27, p1185-1199.
- Hardy, L., Jones, J.G. & Gould, D. (1996). *Understanding psychological preparation for sport*. Chichester: John Wiley & Sons, Inc.
- Heil, J. (1993). *Psychology of sport injury*. Champaign, IL: Human Kinetics Publishers.
- Jenkins, P., Earle-Richardson, G., Slingerland, D., & May, J. (2002). Time dependent memory decay. *American Journal of Industrial Medicine*, 41, p98-101.
- Johnston, L.H. & Carroll, D. (1998). The context of emotional responses to athletic injury: a qualitative analysis. *Journal of Sport Rehabilitation*, 7, p206-220.
- Kerr, A.W., Hall, H.K., & Kozub, S.A (2002). *Doing Statistics with SPSS*. London: SAGE Publications Ltd. p179-194.
- Kingston, K., Lane, A. & Thomas, O. (2010). A temporal examination of elite performers sources of sport-confidence. *The Sport Psychologist*, 18, p313-332.
- Kleinert, J. (2002). An approach to sport injury trait anxiety: scale construction and structure analysis. *European Journal of Sport Science*, 2(3), p49-57.
- Kvist, J., E, A., Sporrstedt, K., & Good, L. (2005). Fear of re-injury: a hindrance for returning to sports after anterior cruciate ligament reconstruction. *Knee Surgery, Sports Traumatology, Arthroscopy*, 13, p393-397.
- Maddux, J.E. & Gosselin, J. T. (2003). Self-efficacy. In: M.R. Leary & J.P. Tangney (Eds.), *Handbook of self and identity* (pp. 218–238). New York: The Guildford Press.
- Magyar, T.M. & Duda, J.L. (2000). Confidence restoration following athletic injury. *The Sport Psychologist*, 14, p372-390.
- Martens, R. (1979). About smocks and jocks. *Journal of Sports Psychology*, 32(1), p94-99.

Martin, J .J., & Gill, D. L. (1991). The relationships among competitive orientation, sport-confidence, self-efficacy, anxiety, and performance. *Journal of Sport and Exercise Psychology, 13*(2) p149-159.

McAuley, E. (1992). Understanding exercise behaviour: A self-efficacy perspective. In: G.C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 107-127). Champaign, IL: Human Kinetics.

McAuley, E., & Mihalko, S.L. (1998). Measuring exercise related self-efficacy. In: J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 371-390). Morgantown, WV: Fitness Information Technology.

McCloy, J. (2004). Coach's concerns: overcoming fear of re-injury. *Coaching Youth Sports*.

McGowan, R.W., Pierce, E.F., Williams, M. & Eastman, N.W. (1994). Athletic injury and self-diminution. *The Journal of sports medicine and physical fitness, 34*(3), p299.

Mitchell, I. (2011). Social support and psychological responses in sport-injury rehabilitation. *Sport and Exercise Psychology Review, 7*(2), 30-44.

Nunnally, J.C. (1978). *Psychometric theory*. New York: McGraw-Hill.

O'Leary, A. (1985). Self-efficacy and health. *Behavioural Research and Therapy, 23*, 437-451.

Osborne, J., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical Assessment, Research and Evaluation, 8*, p1-5.

Pallant, J. (2007). *SPSS survival manual*. Maidenhead: McGraw-Hill.

Pizzari, T., McBurney, H., Taylor, N., & Feller, J. (2002). Adherence to anterior cruciate ligament rehabilitation: a qualitative analysis. *Journal of Sport Rehabilitation, 11*(2), p89-101.

Podlog, L., & Eklund, R. C. (2005). Return to sport after serious injury: A retrospective examination of motivation and psychological outcomes. *Journal of Sport Rehabilitation, 14*, p20-34.

Podlog, L. & Eklund, R.C. (2006). A longitudinal investigation of competitive athletes' return to sport following serious injury. *Journal of Applied Sport Psychology, 18*, p44-68.

Podlog, L. & Eklund, R.C. (2009). High-level athletes' perceptions of success in returning to sport following injury. *Psychology of Sport and Exercise, 10*(5), p535-544.

Podlog, L., & Eklund, R. C. (2010). Returning to competition after a serious injury: The role of self-determination. *Journal of Sports Sciences, 28*, p819-831.

Podlog, L., Dimmock, J. & Miller, J. (2010). A review of return to sport concerns following injury rehabilitation: practitioner strategies for enhancing recovery outcomes. *Physical Therapy in Sport, 12*(1), p36-42.

Quinn, A., & Fallon, B. (1999). The changes in psychological characteristics and reactions of elite athletes from injury onset until full recovery. *Journal of Applied Sport Psychology, 11*, p210-229.

Roberts, W., & Vealey, R.S. (1992). Attention in sport: Measurement issues, psychological concomitants, and the prediction of performance. *Paper presented at the Association for the Advancement of Applied Sport Psychology Conference, Colorado Springs, CO.*

Rotella, R. J. (1985). The psychological care of the injured athlete. In: L. Bunker, R. Rotella, & Reilly (Eds.), *Sport psychology: Psychological consideration in maximising sport performance (pp. 173-187)*. Ann Arbor, MI: McNaughton & Gunn.

Rotella, R. J., & Heyman, S. R. (1986). Stress, injury and the psychological rehabilitation of athletes. *Applied sport psychology: Personal growth to peak performance*, p343-364.

SPSS 20, for Windows, SPSS, IBM Corp., New York.

Taylor, J. & Taylor, S. (1997). *Psychological approaches to sports injury rehabilitation*. Maryland: Aspen.

Thomas, O., Lane, A., & Kingston, K. (2011). Defining and Contextualising Robust Sport-Confidence. *Journal of Applied Sport Psychology*, 23(1), p189-208.

Tracey, J. (2003). The emotional response to the injury and rehabilitation process. *Journal of Applied Sport Psychology*, 15(1), p279–293.

Tripp, D. A., Ebel-Lam, A., Stanish, W., and Brewer, B. W. (2007). Fear of re-injury, negative affect, and catastrophising predicting return to sport in recreational athletes with anterior cruciate ligament injuries at 1 year post surgery. *Rehabilitation Psychology*, 52(1), p74-81.

Udry, E. & Andersen, M.B. (2002). Athletic Injury and Sport Behaviour. In: T.S. Horn (Ed.), *Advances in Sport Psychology* (pp 529-553). Champaign, IL: Human Kinetics.

Vealey, R.S. (1986). Conceptualization of sport-confidence and competitive orientation: Preliminary investigation and instrument development. *Journal of Sport Psychology*, 8, p.221-246.

Vealey, R. S. (2001). Understanding and enhancing self-confidence in athletes. In R. N. Singer, H. A. Hausenblas, & C. M. Janelle (Eds.), *Handbook of sport psychology* (pp. 550-565). New York: John Wiley & Sons, Inc.

Vealey, R.S., and Chase, M.A. (2008). Self-confidence in sport: Conceptual and research Advances. In T.S.Horn (Ed.), *Advances in sport psychology* (3rd ed., pp. 65-97). Champaign, IL: Human Kinetics.

Vealey, R.S., Hayashi, S., Garner-Holman, M., & Giacobbi, P. (1998). Sources of sport confidence: conceptualization and instrument development. *Journal of Sport and Exercise Psychology*, 20, p54-80.

Wadey, R. & Evans, L. (2011). Working with injured athletes: research and practice. In S. Hanton & S D. Mellalieu (Eds.), *Professional practice in sport psychology: a review*. London: Routledge.

Walker, N., Thatcher, J. & Lavalley, D. (2010). A preliminary development of the re-injury anxiety inventory (RIAI). *Physical Therapy in Sport*, 11(1), p23-29.

Wiese-Bjornstal, D.M., Smith, A.M., Shaffer, S.M., & Morrey, M.A. (1998). An integrated model of response to sport injury: Psychological and sociological dynamics. *Journal of Applied Sport Psychology*, 10, p46-69.

Williams, J.M. & Roepke, N. (1993). Psychology of Injury and Injury Rehabilitation. In: R. Singer, M. Murphey & L. Tennant (Eds.), *Handbook of Research on Sport Psychology* (pp. 815-838). New York: MacMillan.

Wilson, R., Sullivan, P., Myers, N., & Feltz, D. (2004). Sources of sport confidence of master athletes. *Journal of Sport and Exercise Psychology*, 26(1), p369-384.

Yang, J., Peek-Asa, C., Lowe, J., Heiden, E., & Foster, D. (2010). Social support patterns of collegiate athletes before and after injury. *Journal of Athletic Training*, 45, p372-379.

APPENDICES

APPENDIX A

PARTICIPANT INFORMATION SHEET

Participant Information Sheet

Researcher Details: Josh Sandel (BSc Hons Sports Conditioning, Rehabilitation and Massage, Cardiff Metropolitan University)

Supervisor: Dr Owen Thomas (Cardiff Metropolitan University)

Project Title: Sources of Confidence and Robust Sports Confidence as Predictors of Re-Injury Anxiety

Background

As part of my undergraduate dissertation study I require roughly 50 participants to complete a series of questionnaires in one sitting. The aim of the study is to collect data which enables the researcher and practitioners to understand potential predictors of levels and frequency of re-injury anxiety. The estimated time to complete the questionnaires is approximately 30 minutes and the specific instructions for each questionnaire are provided. Participation in this study is entirely voluntary and you reserve the right to withdraw at any point. If you do decide to withdraw from the process, the researcher may wish to use the data that has been recorded from you but only if you give consent, otherwise all of your records will be destroyed

Why You?

You have been asked to participate in this study because you are an athlete who has an injury or have a previous injury.

Are There Any Risks?

There are no immediate risks involved with participating in this study, however if you decide you do not feel well enough to take part in the study it is advised that you withdraw from the process. Also if you feel that you do not want to complete a particular questionnaire or question then there is no problem with that.

Is Your Privacy Protected?

Yes, everyone involved in this study will be respectful of your privacy at all times and careful steps have been taken to ensure that you cannot be identified from any of the information that we have about you. All of the data collected in the study will be kept in a safe and secure place and participant's names will not be used in the study with all of the participants involved being assigned a reference number. All of the data collected throughout this study will be stored in accordance with the Data Protection Act (1998). The only people who will have access to this personal information and the results of the study will be my dissertation tutor and I. If any information from the study is published it will be done so with anonymity protected.

Further Information

If you have any further questions or would like to know any more information about how we intend to conduct the study, then please contact me on:

07927 085206

sandeljosh@gmail.com

APPENDIX B

INFORMED CONSENT FORM

Cardiff Metropolitan University

INFORMED CONSENT FORM

Title of Project: Sources of Confidence and Robust Sports Confidence as Predictors of Re-Injury Anxiety

Name of Researcher: Josh Sandel

Participant to complete this section: Please initial each box.

- 1. I confirm that I have read and understand the information sheet for this 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 it is possible to stop taking part at any time, without giving a reason.**
- 3. I also understand that if it happens, our relationships with Cardiff Metropolitan University, or our legal rights will not be affected.**
- 4. I understand that information from the study may be used for reporting purposes, but I will not be identified.**
- 5. I agree to take part in this study on predicting levels and frequency of re-injury anxiety using sources of confidence and trait robustness.**

Name of Participant

Signature of Participant

Date

APPENDIX C

DEMOGRAPHIC INFORMATION SHEET

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 SPORTS 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	
		0	1	2	3	4	5	6	7
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

TRAIT ROBUSTNESS OF SPORTS CONFIDENCE INVENTORY

Trait Robustness of Sports Confidence Inventory (TROSCI)

Please read the instructions carefully before responding to the statements.

The statements below describe how you may feel **generally** about your confidence. Respond to each statement by circling the number that corresponds to how strongly you **generally** agree or disagree. Please try to respond to each item separately.

The term **competition** refers to matches, tournaments or other competitive events.

		Strongly disagree			Neutral			Strongly agree		
1	A bad result in competition has a very negative effect on my self confidence	1	2	3	4	5	6	7	8	9
2	My self-confidence goes up and down a lot	1	2	3	4	5	6	7	8	9
3	Negative feedback from others does not affect my level of self confidence	1	2	3	4	5	6	7	8	9
4	If I perform poorly, my confidence is not badly affected	1	2	3	4	5	6	7	8	9
5	My self-confidence is stable; it does not vary very much at all	1	2	3	4	5	6	7	8	9
6	My self-confidence is not greatly affected by the outcome of competition	1	2	3	4	5	6	7	8	9
7	If I make a mistake it has a large detrimental effect on my self confidence	1	2	3	4	5	6	7	8	9
8	My self confidence remains stable regardless of fluctuations in fitness level	1	2	3	4	5	6	7	8	9

APPENDIX F

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			
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

1 1	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
1 2	I am/was worried about concentrating during rehabilitation because of re-injury worries	0	1	2	3	1	2	3	4	5	6	7
1 3	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 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

APPENDIX G

ETHICAL APPROVAL

CMU ETHICS FORM

PART ONE

Name of applicant:	Josh Sandel
Supervisor (if student project):	Dr Owen Thomas
School:	Cardiff School of Sport
Student number (if applicable):	ST20026848
Programme enrolled on (if applicable):	Sports Conditioning, Rehabilitation and Massage
Project Title:	Sources of Confidence and Robust Sports Confidence as Predictors of Re-Injury Anxiety
Expected Start Date:	1 st November 2014
Approximate Duration:	4 Months
Funding Body (if applicable):	Not Applicable
Other researcher(s) working on the project:	Not Applicable
Will the study involve NHS patients or staff?	No
Will the study involve taking samples of human origin from participants?	No

In no more than 150 words, give a non-technical summary of the project
Roughly 50 participants will complete a series of questionnaires to collect data which enables the researcher and practitioners to understand potential predictors of levels and frequency of re-injury anxiety. The questionnaires will be completed via the use of paper based questionnaires and electronically via survey monkey. The sources of sports confidence and trait robustness scores from the questionnaires will be analysed to identify the potential predictors of re-injury anxiety.

Does your project fall entirely within one of the following categories:	
Paper based, involving only documents in the public domain	No
Laboratory based, not involving human participants or human tissue samples	No
Practice based not involving human participants (e.g. curatorial, practice audit)	No
Compulsory projects in professional practice (e.g. Initial Teacher Education)	No
If you have answered YES to any of these questions, no further information regarding your project is required. If you have answered NO to all of these questions, you must complete Part 2 of this form	

DECLARATION: I confirm that this project conforms with the Cardiff Met Research Governance Framework	
Signature of the applicant: 	Date: 12/11/2014
FOR STUDENT PROJECTS ONLY	
Name of supervisor: Dr Owen Thomas	Date: 12/11/2014
Signature of supervisor: 	

Research Ethics Committee use only	
Decision reached:	Project approved <input checked="" type="checkbox"/> Project approved in principle <input type="checkbox"/> Decision deferred <input type="checkbox"/> Project not approved <input type="checkbox"/> Project rejected <input type="checkbox"/>
Project reference number: 14/5/287U	
Name: Owen Thomas	Date: 11/11/2014
Signature:	
Details of any conditions upon which approval is dependant: Click here to enter text.	

PART TWO

A RESEARCH DESIGN	
A1 Will you be using an approved protocol in your project?	No
A2 If yes, please state the name and code of the approved protocol to be used ³	
N/A	
A3 Describe the research design to be used in your project	
The research project will involve approximately 50 participants completing a series of questionnaires via the means of paper questionnaires and electronically via the use of survey monkey. The aim of the questionnaire is to identify sources of sports confidence and robust sports confidence as potential predictors of re-injury anxiety. A simple regression analysis will be produced to examine what the likely outcome would be of an increase in the independent variables (sources of confidence and robust sports confidence) upon the dependent variables (re-injury anxiety). The regression analysis will aim to identify the potential predictors of high/low levels and frequency of re-injury anxiety. This research design is best suited to this project as questionnaires allow to you to draw conclusions about a total population by asking questions of a small proportion.	
A4 Will the project involve deceptive or covert research?	No
A5 If yes, give a rationale for the use of deceptive or covert research	
Click here to enter text.	

B PREVIOUS EXPERIENCE
B1 What previous experience of research involving human participants relevant to this project do you have?
SSP5057 (Year 13 Sport and Exercise Physiology) – Attended laboratory sessions as part of the course which built up to the production of a journal article in a group based on information gathered from human participation. Participated in a Masters students study.
B2 Student project only What previous experience of research involving human participants relevant to this project does your supervisor have?
Dr. Thomas has supervised research up to and including doctoral level and published empirical material within the area of study.

C POTENTIAL RISKS
C1 What potential risks do you foresee?
There are no foreseen risks involved with this research project although the participants may feel unwell when taking part in the study.
C2 How will you deal with the potential risks?
The participant is advised to withdraw from the study if they feel unwell.

³ An Approved Protocol is one which has been approved by Cardiff Met to be used under supervision of designated members of staff; a list of approved protocols can be found on the Cardiff Met website here

