DOCTORAL THESIS

Sport Injury-Related Growth

Theory-to-Practice

Roy-Davis, Kylie

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Sport Injury-Related Growth:

Theory-to-Practice

Kylie Roy-Davis

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Department of Life Sciences

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This thesis is dedicated to Adam.

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Summary

This thesis explored the concept of sport injury-related growth (SIRG). Specifically, the mechanisms through which growth occurs and how it may be promoted for injured athletes. Study 1 used a grounded theory methodology to develop a context-specific theory. Aligning with a Straussian approach, data was collected using semi-structured interviews and analysed using open, axial, and selected coding. Findings revealed that the mechanisms of (a) meta-cognition, (b) positive reappraisal, (c) positive emotions, and (d) facilitative responses are what enable SIRG. These mechanisms are influenced by a combination of internal (e.g., personality) and external (e.g., received social support) factors. These factors enable injured athletes to alter their perception of their injury into an opportunity for growth, and it is by drawing upon and mobilizing a variety of these resources that athletes are able to experience SIRG. Dimensions of growth were psychosocial, physiological, and behavioral. Although this study produced a theory that explains the SIRG process, it does not propose specific techniques or therapies that encourage the development of growth. To address this issue, Study 2 aimed to investigate and identify evidence-based interventions that promote growth after experiencing adversity. To achieve this aim, a systematic review was conducted on literature pertaining to the promotion of growth for populations who have undergone a stressful experience (e.g., medical illness). In total, 34 studies were located and obtained that met the preplanned inclusion criteria. Within these 37 studies, three types of interventions were identified: emotional processing, cognitive processing, and combined techniques. The authors of the studies who successfully demonstrated the promotion of growth either identified or suggested that growth occurs through the mechanisms of cognitive restructuring and/or reappraisal. Other important considerations that were identified through this review were the duration and timing of the intervention in relation to the adverse event, and the importance of the intervention meeting the needs of the participants. Although this study offers valuable insight into how growth may be more successfully nurtured, the studies included within this review did not specifically focus on promoting growth for injured athletes. Consequently, Study 3 sought to complement this study by examining the practice-based experiential knowledge of sport psychologists who have worked with injured athletes in an applied manner. In total, 10 sport psychologists were purposively sampled and interviewed. Data was collected using a semi-structured interview guide and analysed using content analysis. Findings revealed a fluid development framework that consisted of 5 phases: (a) reactionary phase, (b) preparation phase, (c) reflection phase, (d) application phase, and (e) monitoring phase. Within each phase a set of corresponding strategies, skills, and tools were identified that the sport psychologists would utilize to match the needs of the athletes. The sport psychologists also identified a number of personal and environmental factors that either promoted or hindered the development of SIRG. Altogether, this thesis supports and extends research regarding growth and sport injury, as well as offering applied practitioners useful information for promoting SIRG.

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Publications and Presentations

Journal Publications

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Chapter 1:

Introduction

What is this PhD about?

The aim of this Ph.D. was to better understand the sport injury experience, particularly how sport injury may actually provide beneficial aspects, commonly referred to as "growth", for athletes who have sustained injury. More specifically, this programme of research sought to provide practical information that may further assist individuals who work with injured athletes in an applied manner. Through the use of qualitative research and systematic review, this thesis explored the sport injury experience as well as the promotion of growth for injured athletes. The purpose of the first study, *A Grounded Theory of Sport Injury-Related Growth*, was to develop a context-specific theory pertaining to the development of growth following a sport injury. The second study, *Interventions to Promote Growth Following Adversity: A Systematic Review of Evidence-Based Practice*, used a systematic review methodology to explore interventions that have been used to promote growth for traumatized populations. The final study, *Practice-Based Evidence of Facilitating Sport Injury-Related Growth: Phases and Strategies Recommended by Sport Psychologists*, investigated the experiences and expertise of sport psychologists who have worked with injured athletes in order to further comprehend the issues surrounding growth cultivation in a practical setting. Collectively, these three studies have helped to advance the knowledge of sport injury, in particular the ways in which growth may be developed as a result of a sport-related injury.

Background

The topic of sport injury has long since been an interest of mine, however, I was always drawn to the field of psychology. Fortunately, despite a lifetime of involvement in

sport and physical activity I never experienced a significant sport injury, yet I would constantly see friends and teammates struggle through an injury they had sustained through sport. I knew that I wanted to help them, but I did not know how. Although I would often try to help alleviate the burden of their injury, I could see the toll their injury was having on them, not just physically but mentally and emotionally as well.

In the days before I even began this Ph.D., when I was still trying to figure out what a thesis was and what mine may look like I met with Dr. Ross Wadey. During this meeting he told me about his idea for a programme of research that would begin with the development of a theory related to sport injury-related growth. Although I was vaguely familiar with the concept of post-traumatic growth, I had not yet seen this concept related to sport injury. This quickly sparked a change in my perception of sport injury- the idea that athletes may actually return to their sport *better* than they were before their injury. This idea went beyond exciting me; it felt right to me and I could immediately see the contribution this research could have for the field of sport injury.

Suddenly, I was seeing sport injuries differently. While it was, and is still, my opinion that sport injury will never be a *good* thing- no one *wants* to be injured- but maybe for those unlucky ones who do get injured, my research could help these athletes be a little less unlucky. Maybe sport injuries did not have to be this terrible, debilitative thing. Maybe sport injuries could become an experience that helps athletes. Rather than muddling through their recovery, injured athletes could potentially be guided to achievements they had never reached before or change in ways that will positively affect them. This created not only a personal revelation, but also became the inspiration and focus for my Ph.D.

Conducting Research

Although I knew that the general idea driving my thesis was exploring the concept of growth following sport injury, specifically with the aim of creating a context-specific theory, I needed to decide how this aim would be achieved. Immediately I knew that this first research effort would be a qualitative nature, a methodology I had become familiar with during my undergraduate and graduate studies, but had never personally undertaken. From my time as a student before starting this Ph.D., I knew that research could be of either a qualitative or qualitative nature, or, in some instances, a mixture of the two. I had conducted quantitative research as a Masters student, and can appreciate the satisfaction questionnaires and a numerical value can bring. However, as someone who hesitates around numbers and gravitates towards stories, I knew that my real interest was in qualitative research. While I was confident that I could rise to the personal challenge a numbers-based study, I instinctively knew that I wanted more than that- I wanted the story beyond the statistics. I wanted to discover and explore the feelings and experiences of these athletes, and wholeheartedly embraced the qualitative approach.

Despite my tendency to reduce research methodology to its most basic elements (i.e., quantitative research is numbers, qualitative research is words), this does not fully encapsulate the qualitative research approach. Indeed, the term "qualitative research" lacks a clear definition, and is often defined as simply being the counterpoint to quantitative research (Martin, 2011). Qualitative research does, however, hold common characteristics, such as its search for meanings, subjectivity, context, and reflexivity (Sparkes & Smith, 2014). So while quantitative research is focused on measuring facts and explaining the relationship between these facts in a technical manner, the goal of

qualitative research is to gain understanding of how people experience and make sense of the world (Smith & Caddick, 2012). I knew that this was the research I wanted to conduct and I began to familiarize myself with different qualitative approaches, namely the grounded theory methodology, as I knew this would be the research methodology of my first study.

What I was unaware of at this point, was the importance of determining my own views of ontology and epistemology. A bit bewildered at first- wasn't I studying psychology, not philosophy? I soon realized the significance of these concepts and the relationship between personal viewpoints and research design. So rather than rustling up an interview guide and diving into date collection as I had initially imagined, I found myself pondering on various philosophical ideals and reflecting on my own interpretations of reality and knowledge. Eventually, and with much deliberation, I decided my personal beliefs were those of a post-positivist with critical realism and modified dualism/objectivism. To elaborate, critical realism refers to the idea that the reality that humans perceive is influenced by unobservable events and it is only through attempting to understand these events that we are able to comprehend the social world. Modified dualism/objectivism refers to my belief that as a researcher, it is my duty to make efforts to minimize any effect my presence may have on the research process. Upon deciding these views, I could begin to plan and conduct my research accordingly. Throughout this programme of study, as I progressed through my research and decided on the ensuing steps to be taken, I would constantly question whether the research I was designing and analyzing aligned with my personal beliefs. These beliefs have important

implications, as my personal assumptions influenced how I approached and conducted the research within this thesis.

Overview of the Thesis

This dissertation consists of six chapters in total, and contains three original studies. This introduction serves as the first chapter and is presented for the purpose of providing clarity and to prime the reader for the forthcoming chapters. Following this Introduction, Chapter II, *Literature Review*, is presented to provide a critical review and synthesis of the current literature related to the areas of responses to sport injury, growth research, and sport injury and growth. Specifically, the aims of this chapter are to (a) provide information on the existent research pertaining to sport injury as well as the models and theories of sport injury; (b) review the research related to the emotional responses of athletes upon sustaining injury, and the reported coping strategies these athletes subsequently employ; (c) present and explain the concept of growth following a traumatic or stressful event, including descriptions and critical appraisals of models and theories of growth, as well as describing and critically reviewing prominent growth research; (d) draw together the concepts of sport injury and growth by explaining and critically appraising research that has focused on this area; and (e) summarize the information presented in this chapter and provide recommendations for future research, before concluding with the aims and rationale for this programme of research.

Chapter III, *A Grounded Theory of Sport Injury-Related Growth*, reports results from Study 1, which aimed to develop a context-specific theory of growth following a sport injury by exploring the experiences of injured athletes who perceived a degree of

growth from their own injury. A grounded theory methodology was conducted, with 37 injured athletes taking part and providing a total of 70 interviews collected through the use of semi-structured interviews. After each interview, the data was transcribed and analyzed using a method of open, axial, and selective coding. Findings reveal that injured athletes are able to experience the development of growth through the mechanisms of metacognition, positive reappraisal, positive emotions, and facilitative responses. These mechanisms are influenced by the presence of a combination of internal and external factors, which if support the development of growth, will positively affect the athlete and result in a perception of injury has holding inherent opportunities. This theory provides greater insight into the injury experience, particularly the role and occurrence of growth related to sport injury, illuminating why some athletes may be able to experience the development of growth while others are not. However, this study did not provide information on how this growth process may be encouraged in an applied setting, and therefore the aim for the following study focused on delving into the topic of specific interventions that may successfully promote growth.

Chapter IV, *Interventions to Promote Growth Adversity: A Systematic Review of Evidence-Based Practice,* gives a description and the results from the second study of this thesis. This study used a systematic review methodology to investigate the use of interventions that have demonstrated success in promoting post-traumatic growth. As the ultimate goal for this thesis is to provide information that will aid applied practitioners working with injured athletes, the desired research question at the commencement of this study was to focus on research conducted regarding post-traumatic growth and sport injury. However, as this is a relatively new area of research and there is insufficient, if

any, existent literature that addresses this research question, the goal of this review shifted to concentrate on any intervention-based research conducted with the goal of fostering growth for a population that had experienced a stressful or traumatic event. In total, 37 studies were identified that met the pre-determined inclusion criteria. These 37 interventions fell into 4 categories: (a) emotional processing- seeking to provide the participant with a sense of closure, catharsis, or fulfillment; (b) cognitive strategies- which attempt to bestow participants with the relevant tools to aid the post-traumatic growth process; (c) combined technique- interventions that drew upon both emotional and cognitive processing techniques; and (d) qualitative interventions- studies which used interventions aimed at promoting growth but focused on gaining rich, in-depth information gathered through interviews and observations. Among the studies that successfully demonstrated the encouragement of growth, the researchers either identified or suggested that these interventions were able to foster growth through the mechanisms of cognitive restructuring and/or reappraisal. This review also identified that both the duration of the intervention and the timing of the intervention implementation after the traumatic event are important considerations. These findings illuminate certain methods through which growth may be better encouraged yet these studies did not focus on promoting growth for injured athletes. The need to further understand the process of urging growth for injured athletes provided the rationale for the following study.

Chapter V, *Practice-Based Evidence of Facilitating Sport Injury-Related Growth: Phases and Strategies Recommended by Sport Psychologists*, explains the procedure and results of the final study in this programme of research. The goal of this study was to gather information about the real-world experiences of sport psychologists who work

with injured athletes in a practical setting. In particular, this research sought to explore any issues related to the promotion of growth for applied practitioner working with injured athletes and investigate how these practitioners have been able to successfully encourage growth for injured athletes. This study specifically decided to use sport psychologists for participants, as these individuals were more likely to be familiar with the concepts of post-traumatic growth and therefore provide richer, more in-depth data. Ten sport psychologists were purposively selected for their expertise and experiential knowledge and data was gathered through the use of semi-structured interviews. Analysis of the data revealed that the sport psychologists were able to encourage growth by effectively guiding the injured athlete through a fluid developmental framework. This framework consists of five phases: (a) reactionary phase, (b) preparation phase, (c) reflection phase, (d) application phase, and (e) monitoring phase. The sport psychologists also reported using a variety of specific strategies, skills, and tools that would be employed to match the current needs of the athletes. Finally, a number of personal and environmental factors were identified that either promoted or hindered the development of growth. These results offer useful information to applied practitioners and in this way extend the previous research.

Chapter VI, *General Discussion and Conclusions*, is the final chapter and brings this dissertation to a close by summarizing the three studies and discussing their contribution to knowledge. After this review of the three original studies and their results, this chapter concentrates of the theoretical and empirical impact, as well as the practical implication of this research. Thereafter, the strengths and limitations of this thesis are

discussed and recommendations for avenues of future research are presented. Finally, the central aspects of this programme of research are drawn together in an overall conclusion.

Chapter 2:

Literature Review

Abstract

The purpose of this chapter was to provide a critical review of the psychology of sport injury literature, the concept of growth following adversity, and recent research that has aimed to integrate these two bodies of literature Specifically, this reviews describes a model, theories, and research related to the psychological response to sport injury, namely the integrated model of response to sport injury developed by Wiese-Bjornstal, Smith, Shaffer, and Morrey (1998). It also synthesizes the literature related to models, theories and research on post-traumatic growth. Lastly, it draws these two concepts together in the context of growth following a sport injury. The review considers both conceptual and methodological issues across the bodies of literature. The chapter concludes with a summary and recommendations for areas of future research.

Introduction

The purpose of this chapter is to provide a critical review of the research related to the concepts of sport injury and growth following adversity as a basis for the rationale for this programme of research. The chapter has been divided into four sections: *Responses to Sport Injury*, *Growth Following Adversity*, *Sport Injury and Growth*, and *Summary*. The first section, *Response to Sport Injury*, will synthesize the research into athletes' psychological responses to sport injury. The second section, G*rowth Following Adversity*, will explore the literature related to benefits associated with undergoing a traumatic or stressful event across a variety of populations and types of stressful events. The third section, *Sport Injury and Growth*, will examine the research relating to the benefits derived from experiencing a sport-based injury. This review has been separated so as to introduce the reader first to the topic of *Responses to Sport Injury,* as this is considered the primary concept of this sport psychology-based thesis. However, this thesis is also concerned with the field of post-traumatic growth and therefore the following section, *Growth Following Adversity*, helps facilitate knowledge translation between other fields of research and sport psychology by contextualizing growth following sport injury and the large body of research exploring growth following adversity. Finally, to draw these two fields together, the third section, *Sport Injury and Growth*, provides a contextualized understanding of growth within the context of sport injury. The fourth and final section will provide a summary of the chapter and recommendations for future research.

Responses to Sport Injury

Although research into the psychology of sport injury dates back to the 1960's,

the majority of it has been conducted over the last 20 years. Findings in this field have indicated that athletes who have sustained injury undergo cognitive, emotional, and behavioural changes, the majority of which have been considered unpleasant in nature (Evans, Mitchell, & Jones, 2006). Indeed, injury has been viewed as a largely negative experience characterized by heightened levels of depression, frustration, and helplessness (e.g., Evans & Hardy, 1995; Leddy, Lambert, & Ogles, 1994). Where positive effects of injury were reported they emerged serendipitously (e.g., Bianco, Malo, & Orlick, 1999; Ford & Gordon, 1999; Hurley, Moran, & Guerin, 2007; Podlog & Eklund, 2006; San Jose, 2003; Tracey, 2003). However, in recent years, researchers have begun to investigate positive consequences related to sport injury (e.g., Udry, Gould, Bridges, & Beck, 1997) encouraging a shift to a more inclusive view of the injury experience (Wadey, Evans, Evans, & Mitchell, 2011), wherein both negative and positive experiences are considered. Unfortunately, to date these studies have been somewhat solitary in nature, and not provided a focused, systematic approach to this important line of enquiry.

A more inclusive view of the research to date, suggests that injured athletes report both negative (i.e., anxiety) and positive (i.e., increased resilience) responses, suggesting that injury may not be an inherently a negative experience as originally conceived. Indeed, contrary to the prevailing belief that injury is a largely negative experience, in recent years research has highlighted the ways in which athletes are able to benefit from their injury and even experience a degree of growth as a result of it (e.g., Galli & Vealey, 2008; Podlog & Eklund, 2006; Tracey, 2011; Udry et al., 1997; Wadey et al., 2011; Wadey, Evans, Hanton, & Neil, 2012).

Models and Theories of Sport Injury

As the field of sport injury research has grown, researchers have endeavored to provide explanations of the injury experience and the underlying processes through the development and application of various models and theories. These models and theories include the integrated model of response to sport injury (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998), biopsychosocial model of sport injury rehabilitation (Brewer, 2003), stage-based grief response models (Kubler-Ross, 2009), self-determination theory (Deci & Ryan, 2011), cognitive-motivational relational theory of emotion (Lazarus, 2000), self-efficacy theory (Bandura, 1994), reversal theory (Apter, 1989), personal investment theory (Maehr, & Braskamp, 1986), and protection motivation theory (Rogers, & Prentice-Dunn, 1997). The first three of these - the integrated model of response to sport injury, the biopsychosocial model of sport injury rehabilitation, and the stage-based grief response - will now be discussed, as these are typically the most adopted within the sport injury research. Indeed, the factors and processes identified by these models, and theory, have also been identified in research pertaining to post-traumatic growth; in this way, these models and theory show promise for making connections between the fields of sport injury and growth following adversity. Of particular importance to this programme of research, is the integrated model of response to sport injury (Wiese-Bjornstal et al., 1998), as this model has received the most empirical support to date (Wadey & evans, 2011), and has served as the foundation for this thesis.

Although each model and theory has specific strengths, the model that has received the most attention in the literature is the integrated model of response to sport injury (Wiese-Bjornstal et al., 1998). According to this model (see Figure 1), a

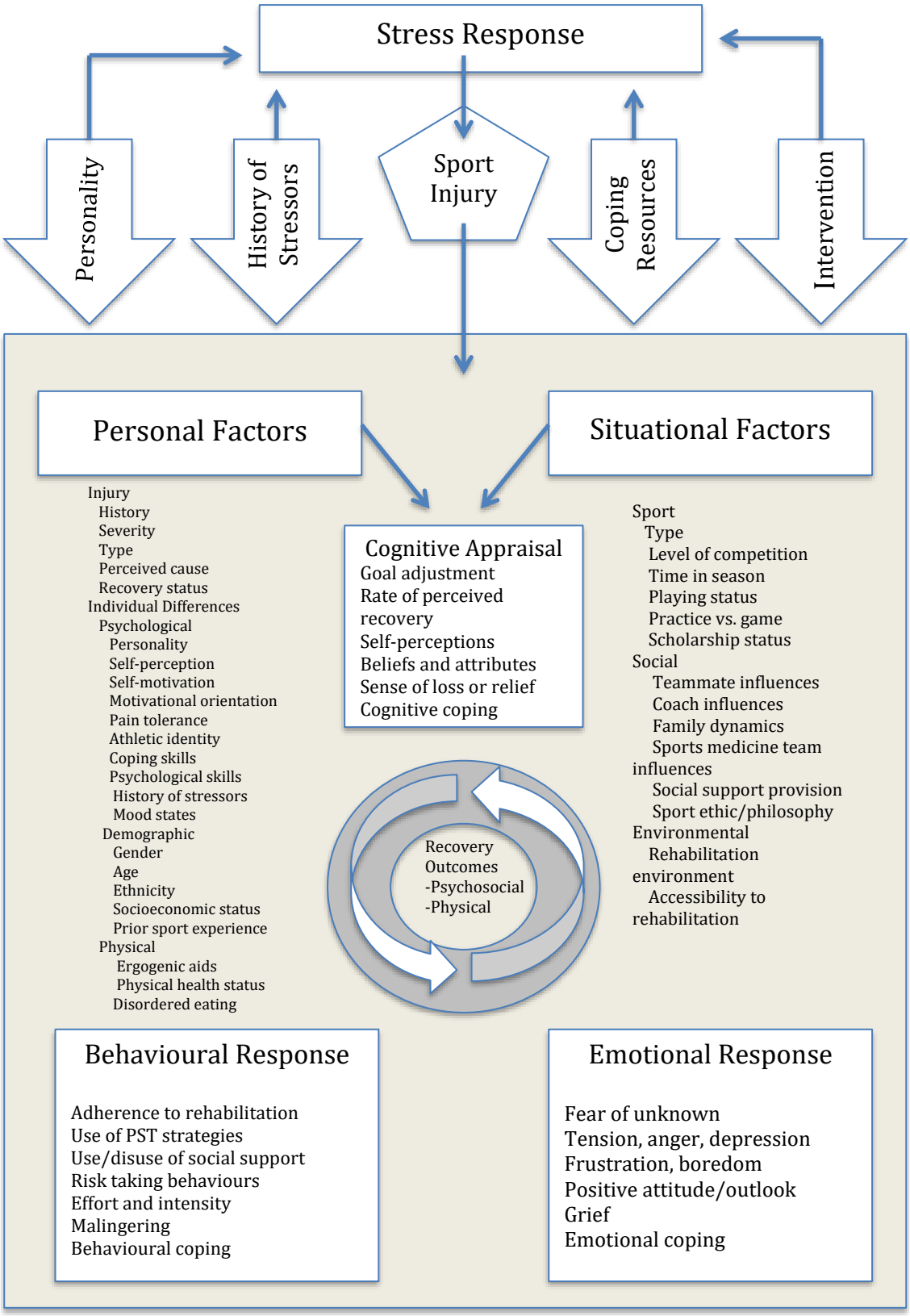

Figure 1. Wiese-Bjornstal Integrated Model of Response to Sport Injury

combination of pre-injury and post-injury variables influence an athlete's responses to injury and their ensuing recovery outcome. Factors such as personality (e.g., perfectionism), history of stressors (e.g., previous injury/injuries), coping resources (e.g., psychological skills), and interventions (e.g., stress management) comprise the pre-injury variables. Post-injury variables include personal factors (e.g., severity of injury) and situational factors (e.g., time of competitive season). These factors influence an athlete's cognitive appraisal of their injury and rehabilitation, and their emotional and behavioural responses, and recovery outcome. For example, a runner who has incurred his second knee injury three months before the start of the competitive season, experienced this injury previously (i.e., personal factor/history of stressors), but has sufficient time before the season begins (i.e., situational factors), might have a positive attitude about making a full recovery (i.e., cognitive and emotional response). This in turn could affect his adherence to his rehabilitation programme (i.e., behavioural response), resulting in a shorter, more successful recovery process and returning to competition at an equivalent, or even higher level of functioning than previously (i.e., recovery outcome). In this instance, an athlete may exhibit signs of growth resulting the injury. This model, although well-developed and widely used, however, does not provide a detailed explanation of the mechanisms through which athletes may experience the full range of possible recovery outcomes.

More recently, Brewer (2003) developed the biopsychosocial model (see Figure 2), which integrates the frameworks of existing models of sport injury rehabilitation (e.g., Wiese-Bjornstal et al., 1998) with more general models of health outcomes (e.g., Cohen & Rodriguez, 1995). The biopsychosocial model is comprised of seven dimensions:

injury characteristics, sociodemographic factors, biological factors, social and contextual factors, intermediate biopsychological outcomes, and sport injury rehabilitation outcomes. In this model, injury characteristics refers to the nature of the injury (e.g., type, location, severity, history), which together with the individual's sociodemographic factors (e.g., age, gender, race/ethnicity, and socioeconomic status) will influence the biological (e.g., immune functioning), psychological (e.g., personality), and social/contextual (e.g., life stress) factors. These three factors will subsequently affect the intermediate biopsychological outcomes, such as range of motion, strength, pain, and recovery rate. Finally, these intermediate outcomes will influence the rehabilitation outcomes, for example, functional performance, quality of life post-injury, treatment satisfaction, and desire and readiness to return to sport. Within this model, psychological factors play a unique, central role, having a direct bidirectional relationship with biological and socio-contextual factors, and the resulting intermediate and final recovery outcomes. While this model provides a holistic framework that helps to explain the process of sport injury rehabilitation, it does not offer an explanation of the relationships between the specific psychological variables.

Prior to models that were specifically developed in a sport injury context, sport injury research often drew upon the stage-based grief model developed by Kubler-Ross (2009). This model (see Figure 3), which was derived to explain the emotional experiences of the terminally ill, postulates that grieving individuals will experience five stages: shock and denial, anger, bargaining, depression, and acceptance. Shock and denial, the first stage, is characterised by an individual's failure to accept their current situation. This denial is reported to function as a buffer, affording the individual time to

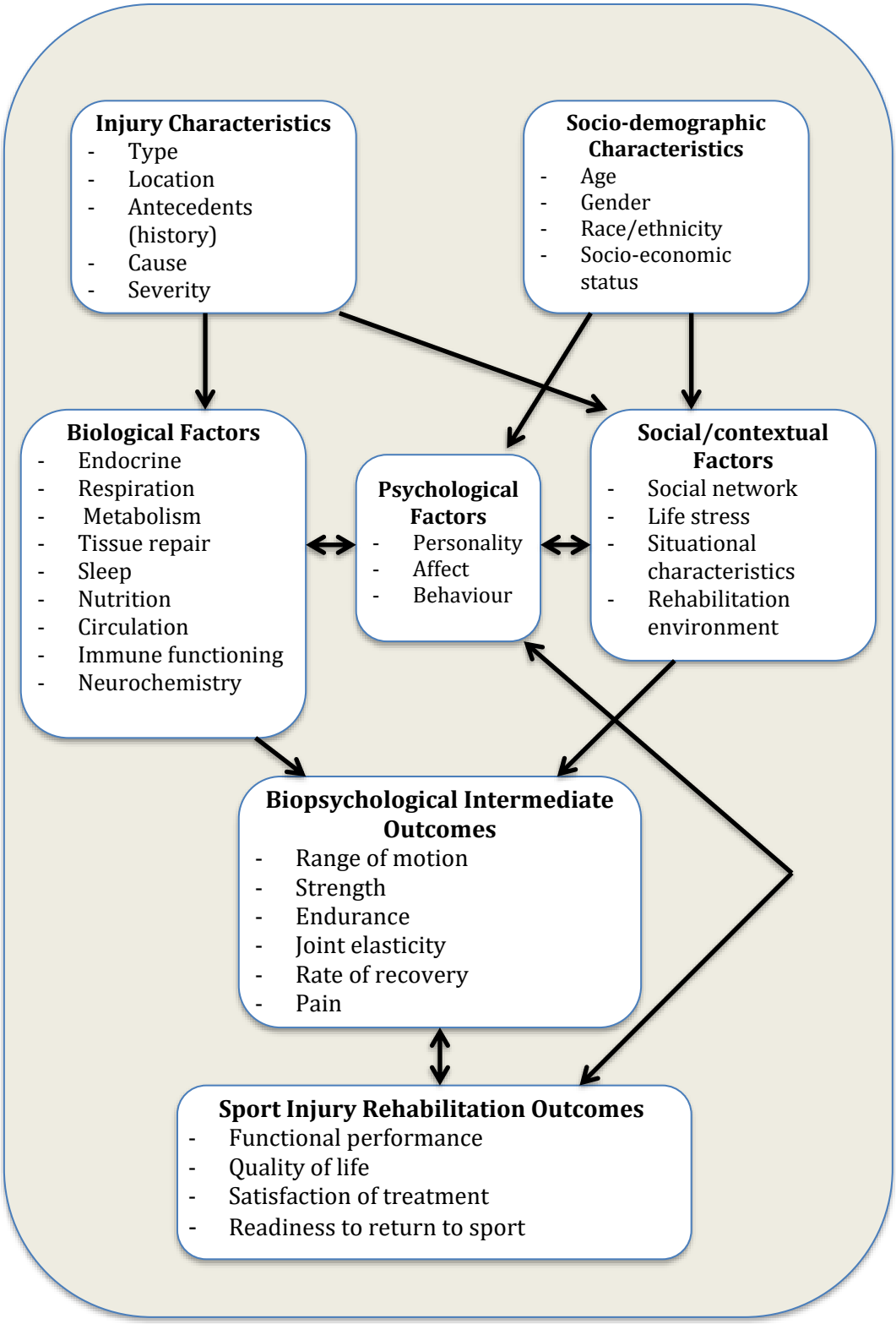

Figure 2. Biopsychosocial Model.

begin mobilising psychological defences. The second stage is characterised by anger, which is directed either externally (e.g., coach) or internally (i.e., self) and is fuelled by a sense of betrayal. Next, a stage of bargaining, is marked by the individual attempting to find a sense of resolution by offering pledges; this part of the process is typically kept secret or only shared with those the individual deems trustworthy. A period of depression follows, marked by symptoms such as social withdrawal, hopelessness, and unproductiveness. This depressive stage appears to be the longest period within the grief process and is considered to serve as a tool to facilitate acceptance of the impending loss. In the final stage of acceptance, they acknowledge their loss and its consequences. While reaching this stage does not denote a sense of happiness, it does signify the completion of the individual's progression through the grieving process. Although developed for a different population, sport injury researchers have argued the applicability of grief to an athletic population, positing that athletes' exhibit a comparable grief response upon sustaining injury (Evans & Hardy, 1995). This grief is postulated to be due to the significant personal loss that occurs as the result of the injury and the interruption it causes to an athlete's investment in their training and sport participation (Brewer, 1999; Van Der Poel, J., & Nel, P., 2011). However, a number of researchers have questioned the relevance of this model to the sports injury process, not least because of the impermanent nature of most injuries (Rose & Jevne, 1993; Udry et al., 1998).

The strengths of the integrated model of sport injury response and the biopsychosial model are that they were developed for sport injury and so are contextual to this field of research (e.g., Brewer et al., 2002; Wiese-Bjornstal et al., 1998). Likewise, the Kubler-Ross stage-based model of grief provides insight into the process that injured

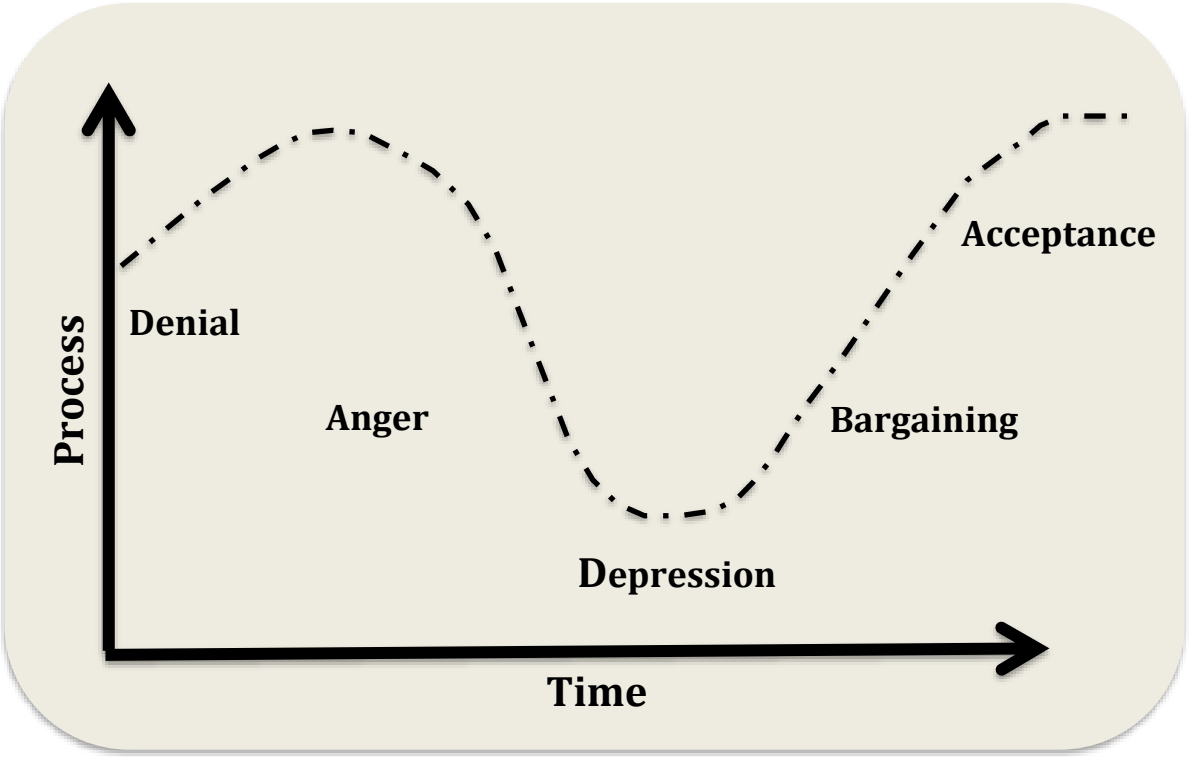

Figure 3, Kubler-Ross Stages of Grief Model

athletes may face, particularly when the potential for loss if great and their identity as an athlete is threatened. Although these models, alongside others not discussed within this literature review, have aided our knowledge and understanding of specific concepts in an injury context, they are limited in describing and explaining certain phenomena. These limitations include firstly, a failure to define, delimit, and describe specific recovery outcomes, which is essential for elucidating the recovery process and associated outcomes. Also, across these models and theories is a failure to explain the mechanisms for attaining certain recovery outcomes. For example, are there different processes for different recovery outcomes? It is important to ascertain these mechanisms to guide future research and theory development. Finally, the models described above were not

designed to direct interventions. Indeed, models need to bridge the gap between theory and practice. For example, what interventions should practitioners use to help foster desirable, and prevent undesirable, recovery outcomes?

Responses to Sport Injury Research

Upon sustaining an injury, athletes are likely to experience a range of emotional, cognitive, and behavioural responses (Evan, Mitchell, & Jones, 2006). As discussed in the previous section, a number of models regarding the response to and rehabilitation from sport injury have been proposed in the sport injury literature. The model that has received the most attention in the response to sport injury research is the integrated model of response to sport injury developed by Wiese-Bjornstal et al. (1998). Researchers have focused on various aspects described in the model including: cognitive appraisal (e.g., Albinson & Petrie, 2003; Chung, 2012; Daly, Brewer, Van-Raalte, Petitpas, & Sklar, 1995; Ruddock-Hudson, O'Halloran, & Murphy, 2012; Weiss & Ebbeck, 1996), social support (e.g., Abgarov, Jeffrey-Tosoni, Baker, & Fraser-Thomas, 2012; Mitchell, 2011; Rees, Mitchell, Evans, & Hardy, 2010; Rees, Smith, & Sparkes, 2003), psychological skills (e.g., Hare, Evans, & Carlow, 2008; Nordin-Bates et al., 2011; Wesch et al., 2012), adherence to rehabilitation (e.g., Marshall, Donovan-Hall, & Ryall, 2012), interventions (e.g., Rock & Jones, 2010), recovery outcomes (e.g., Brewer, 2010), and a number of personal (e.g., athletic identity; Brewer, Cornelius, & Van Raalte, 2010) and situational factors (e.g., timing of injury; Gayman & Crossman, 2003). As it is beyond the scope of this review to examine the research pertaining to each of these variables, the following sections will provide a critical discussion of injured athletes' emotional responses and coping attempts, as these concepts are germane to this thesis and are prominently featured

in both the literature regarding sport injury responses as well as the literature regarding post-traumatic growth.

Emotional responses. The initial period following injury occurrence is typically characterized by negative feelings, such as frustration, anger, and depression (e.g., Clement, Arvinen-Barrow, & Fetty, 2015). For example, Mainwaring et al.'s (2004) reported a significant spike in depression, confusion, and total mood disturbance in athletes immediately after injury occurrence; emotions that subsided three weeks after injury, as the athletes began to cope with their situation. To better understand the reactions related to sport injury, Udry et al. (1998) interviewed 21 elite skiers about their responses after sustaining season-ending injuries. In total, 136 psychological reactions were identified and categorized into four dimensions: injury-relevant information processing-awareness (e.g., questioning), emotional upheaval/reactive behaviour (e.g., emotional agitation), positive outlook/coping attempts (e.g., good attitude/optimism) and other (e.g., ambivalence). These results further highlight the temporal nature of psychological reactions to injury, as athletes demonstrated a need to first process their injury-relevant information before responding emotionally. However, the aim of this study was not to determine the temporal sequence of psychological reactions, but to investigate the range of responses that occur. This concept supports, and extends, the findings of Quackenbush and Crossman (1994) who surveyed 25 injured athletes and identified 48 emotional reactions related to the injury experience. Of these 48 reported emotions, 36 were positive (e.g., hopeful) and 12 were negative (e.g., frustrated), and likewise displayed a temporal element, with negative emotions decreasing over time and positive emotions increasing.

Subsequent studies further suggest that athletes' emotions are likely to shift and become more positive as they progress through their recovery (e.g., Madrigal & Gill, 2014). However, injury onset is generally found to be associated with the experience of numerous negative emotions such as fear, anger, or depression (Faris, 1985). Rehabilitation is typically characterized as a period that includes discouragement, frustration, and isolation, while return to sport is associated with emotions such as impatience, anxiety, anticipation, and increased confidence (e.g., Bianco, 2001; Granito, 2001; Johnston & Carroll, 1998). In Tracey's (2003) exploration of college athletes' recovery from moderate to severe injuries, results showed that emotions fluctuated in the time after injury, characterized by feelings of loss, lowered self-esteem, anger, and frustration. Over time, however, athletes' view of their injury began to evolve and injury was instead perceived as a challenge and was approached with a positive attitude. Ultimately, these athletes acknowledged that their injury and rehabilitation was a process that facilitated greater self-understanding (e.g., inner strength) and appreciation (e.g., not taking health for granted).

Ruddock-Hudson et al., (2014) investigated the emotional reactions of Australian League Football players and found that the severity of the injury appears to moderate athletes' emotional reactions, with minor and severe and/or long-term injuries showing distinct emotional variations. Minor injuries seem to present little concern or limitations for athletes and so are responded to more positively and optimistically. Conversely, long-term injuries, such as knee reconstructions, invoke negative emotional responses and are viewed as more challenging. Social support is another factor that moderates emotional responses to sport injury, however, this effect diminishes with minor injuries.

Coping strategies. Sport injury is an experience associated with a high degree of strain, leading researchers to focus on the coping strategies used by injured athletes during injury onset, rehabilitation, and return to sport (e.g., Evans, Wadey, Hanton, & Mitchell, 2012). Coping is defined as the "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Just as athletes experience a range of emotional responses as a result of a sport injury, they draw upon a variety of coping strategies, specifically, emotion- or problem- focused. Emotion-focused coping strategies aim to manage the negative emotions associated with the stressor (e.g., emotional disclosure). Problem-focused coping strategies concentrate on tackling the stressful situation (e.g., planning). More recently, researchers have explored the use of avoidant coping (e.g, Allen, Greenlees, & Jones, 2011; Carson & Polman, 2010), which refers to strategies used to avoid the situation through distraction (e.g., cognitive distancing) or social diversion (e.g., walking away). In this way, avoidance coping strategies may facilitate control over short-term emotional states and has been observed to be a strategy regularly used by athletes to deal with acute stress during sport participation (Nicholls, Holt, Polman, & Bloomfield, 2006). However, avoidant coping is generally associated with a number of psychological and physiological outcomes and is suggested to be maladaptive long term (e.g., Kim & Duda, 2003). Other research on coping skills related to sports injury reveal that athletes seek to gather information regarding their rehabilitation to gain a better understanding on the route to recovery (Carson & Polman, 2008), a form of problem-focused coping. Instances of emotion-focused coping strategies throughout the sport injury process (e.g., Udry et al., 1998;

Wadey et al., 2012b) include venting of emotions, seeking emotional social support, positive self-talk, and reframing negative thoughts and emotions.

The possession and employment of coping skills appear to be shaped in part by instances of past adversity (Bejar & Butryn, 2016). Being exposed to stressful events previously may enable athlete to feel better prepared to face stressors, such as sport injury. Athletes exhibit high degrees of perseverance through their participation in sport and it is speculated that this determined approach helps athletes to cope with their injury. In Albinson and Petrie's (2003) examination in cognitive appraisals, stress, and coping after sports injury, cognitive appraisals were found to be related to the coping strategies used by injured athletes. Specifically, athletes' primary and secondary appraisals of their injury related to their coping strategies, with athletes who scored higher in mood disturbance during this period demonstrating higher occurrences of avoidance coping techniques. Findings from this study suggest that the first week post-injury may be a crucial time-point for athletes' appraisals, as this appraisal will influence athletes' coping strategies throughout the remainder of their recovery. For example, athletes that utilized avoidant coping techniques at the seven-day mark after injury onset also exhibited less cognitive active coping (i.e., attempts to manage appraisal of stressful event) during subsequent assessments. This suggests that helping injured athletes to manage their cognitive appraisals will also influence their engagement in behaviour aimed at dealing with their injury and its affects.

Johnston and Caroll (2000) also found a temporal element, as their results showed that coping varied as a function of stage in rehabilitation. It was also revealed that the use of coping strategies declined over the course of rehabilitation, showing that rather than

shifting coping strategies, athletes' use of coping declined overall as they progressed through recovery. Furthermore, coping appeared to be a stable characteristic of individuals, with no clear situational-specific coping strategy emerged from the data. However, results did demonstrate that participants preferred informational and emotional support in the middle and towards the end of their rehabilitation rather than at the beginning. This may be due to the athletes in their study being less receptive and regarding these types of support to be unnecessary during injury onset to deal with the intense emotions that characterize it.

Growth Research

Historically, both research and anecdotal evidence has postulated how personal gain can be derived from experiences of overcoming adversity (Joseph & Linley, 2004). However, it has not been until recently that growth following adversity has been studied with empirical and theoretical rigor (e.g., Calhoun & Tedeschi, 2006; Carver, 1998; Heffernon, Grealy, & Mutrie, 2009; Joseph & Linley, 2008; Weiss & Berger, 2010). Growth, defined as the perceived positive change that elevates a person to a higher level of functioning after enduring a stressful or distressing event (e.g., Kampman, Heffernon, Wilson, & Beale, 2015), can be personal (e.g., greater appreciation), psychological (e.g., increased confidence), social (e.g., strengthened relationships), and/or behavioural (e.g., improved coping skills) (e.g., Heffernon et al., 2009). Proposed mechanisms that support, or hinder, the development of growth include deliberate rumination, meaning-making, and social support (Tedeschi & Calhoun, 2004).

Growth may also be explained through the prism of mindsets (Dweck, 2006; 2007; 2012). According to Dweck, individuals lie on a spectrum between either a fixed

mindset or a growth mindset. Those who lie closer to the end of fixed mindsets believe that each person has a finite amount of un-increasable intelligence as well as certain personality and moral characteristics that cannot be altered. Alternatively, those closer on the spectrum to a growth mindset believe that each person is in control over their abilities and therefore are capable of becoming more intelligent and developing their personality and moral character. Research in this area has shown that individuals with fixed mindsets avoid challenges (Blackwell, Trzesniewski, & Dweck, 2007) and demonstrate less resilience as well as increased levels of discouragement and defensiveness when faced with setbacks (Dweck, 2006; 2007; Nussbuam & Dweck, 2008). Contrariwise, individuals with growth mindsets have a tendency to be more resilience in the face of setbacks and will seek challenging opportunities as a means of producing personal improvement and learning (Dweck, 2007). In this way, teaching growth mindsets helps to significantly boost motivation and goal achievement (Blackwell et al., 2007). Although this research can help to explain why some individuals are able to experience growth while others are not, Dweck's work does not focus on growth following adversity nor does the research in this area include an athletic population.

To date, one of the major challenges that has pervaded this body of research has been the variety of terms used to refer to the positive changes derived following a challenging event. Examples of these terms include posttraumatic growth (Tedeschi & Calhoun, 2004), stress-related growth (Park, Cohen, & Murch, 1996), adversarial growth (Linley & Joseph, 2004), thriving (O'Leary & Ickovics, 1995), and benefit-finding (Affleck & Tennen, 1996). The issue of ambiguity in terminology, and the lack of one encompassing agreed term, is addressed later in this thesis (see Chapter 3). The issue of

terminology aside, what is clear is that research that has focused on growth following adversity has increasingly come to the fore and gained in popularity; with a number of models and theories aimed at explaining the processes that lead to growth receiving increased research attention.

Models and Theories of Growth

The concept of growth derived from a challenging experience has been studied across a wide range of psychologically devastating events, such as bereavement (e.g., Boelen, 2010; McDevitt-Murphy, Neimeyer, Burke, Williams, & Lawson, 2012), illness (e.g., Gugletti et al., 2010; Low & Stanton, Bower, & Gyllenhammer, 2015), divorce (Tashiro, Frazier, & Berman, 2006), and natural disasters (e.g., Lowe, Manove, & Rhondes, 2013; Dawson et al., 2014). The models and theories describing growth following trauma include, but are not limited to, Nerken's model of growth following loss (1993), the functional-descriptive model (Tedeschi & Calhoun, 1995), the person-centered theory (Joseph, 2015), the organismic valuing theory (Joseph & Linley, 2005), and the biopsychosocial-evolutionary view (Christopher, 2004). Of these, Tedeschi and Calhoun's functional-descriptive model, the person-centered theory, and the organismic valuing theory, merit further attention in the context of the present programme of research as these models and theories have received the most empirical support within the relevant literature.

Tedeschi and Calhoun's (e.g., 1995) functional-descriptive model (see Figure 4) posits that traumatic events challenge a person's pre-trauma schema by shattering prior goals, beliefs, and ways of coping. A traumatic event, such as sport injury, causes a

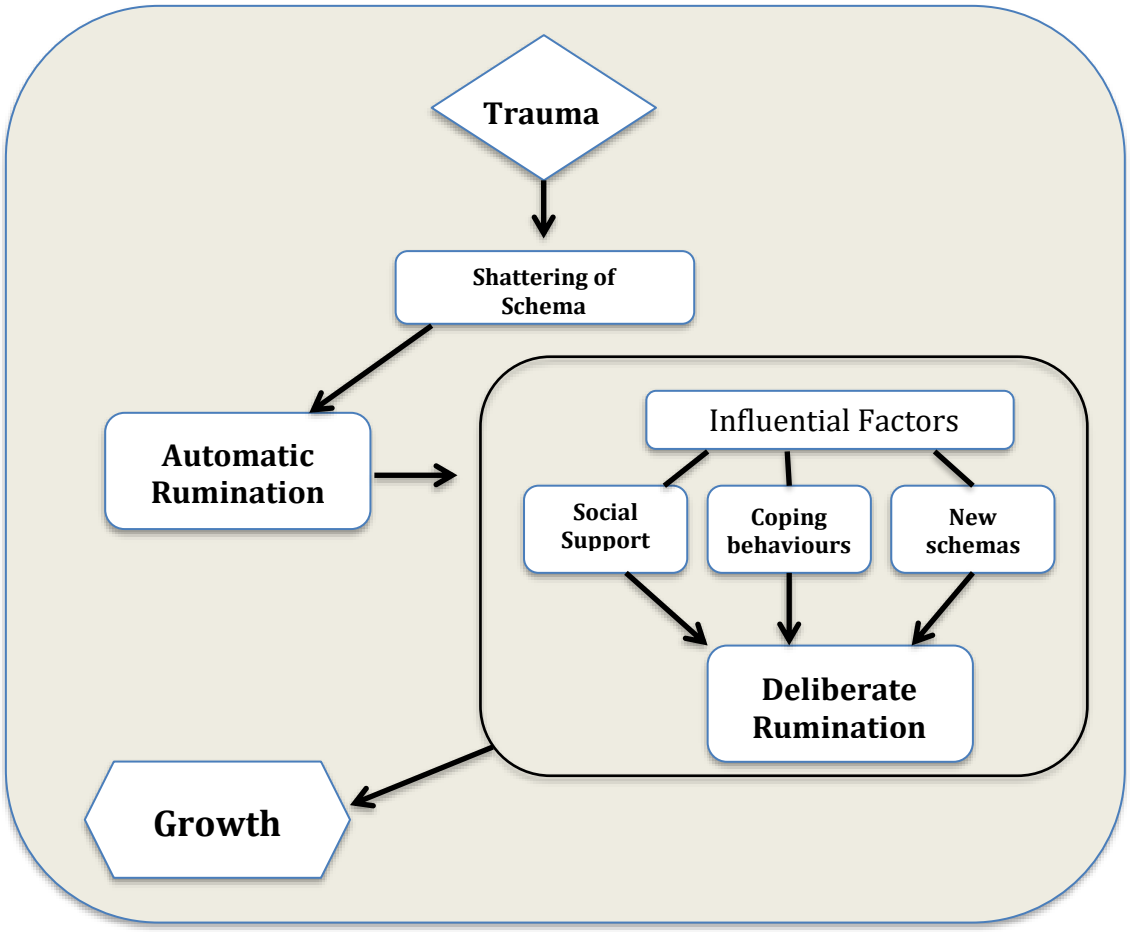

Figure 4. Functional-Descriptive Model

disruption of previously held assumptions and beliefs, which will cause an individual to experience a degree of distress. For example, shattered assumptions and beliefs for an injured athlete may relate to a threat to their athletic identity or their future sporting plans, such as career goals. This in turn will cause that individual to begin a process of rumination. Rumination is done in an effort to deal with emotional reactions and to make sense of what has happened. In the beginning, rumination will be automatic rather than deliberate in nature. These early ruminations are characterized by frequently thinking about the traumatic event and related issues, which over time should reduce the emotional

distress caused by the trauma. After this stage, the individual will begin to ruminate in a deliberate effort to better understand the trauma and the consequences it has for their life. Social support, new coping behaviours, and the opportunity to construct new, post-trauma schemas will influence this ruminative process. During this stage, coping is considered successful if it aids extrication from now inaccessible goals and untenable beliefs, as well as decreasing emotional distress. Successful coping will not only aid the individual's adaptation to their post-trauma circumstances, but will also assist that person to re-appraise the situation and find meaning in their traumatic experience. This indicates that the individual has overcome their initial distress, learned a new coping method, relinquished their previous schemas, and cultivated new beliefs and goals. In this way, the individual has adapted to their trauma and experienced growth.

The person-centered theory (Joseph, 2003, 2004, 2005) proposes that humans are intrinsically growth-oriented and therefore, given the right social environment, they are naturally inclined to cognitively accommodate their experience (Joseph & Linley, 2006). Analogous to Carl Rogers (1959), Joseph (2003, 2004, 2005) also believed that individuals are inclined towards growth because they are always seeking to become fully functioning. A fully functioning person is an individual who accepts themselves and values both their strengths and weaknesses, is able to fully live in the present, experiences life as a process, finds meaning and purpose in their life, is compassionate towards others, values trust, desires authenticity, and accepts that change is a necessary inevitability. In relation to a traumatic experience, person-centered theory posits that the resulting stress causes a breakdown of the self-structure. These stressful experiences are divergent with the self-structure and therefore perceived as threatening, causing a sense

of denial as the individual attempts to preserve a consistent self-structure. However, a traumatic event will create such a degree of incongruence that it will instigate a process of breakdown and disorganization of the self-structure, which will cause the individual to develop a new self-structure, bringing congruence between the new self and the traumatic experience. In this way, the individual is moved towards becoming more fully functioning, as growth is not related to returning to baseline, but about going beyond previous levels of functioning. As a generic theory of growth, it can be applied to any experience that disrupts the self-structure, including a gradual breakdown, and subsequent rebuilding, of the assumptive world. While this theory provides a meta-theoretical underpinning that helps explain the development of growth, unfortunately it neglects the role the social environment may play in the growth process.

In their more recent research, Joseph and Linley (2006) integrated the person-centered theory with the literature on positive psychology, and proposed the organismic valuing theory (OVT). This theory states that growth is promoted when an individual's current social environment is able to meet their basic needs for autonomy, competence, and relatedness. The growth process begins with a traumatic or stressful event that shatters the individual's perception of their world. Thereafter, the individual will begin to process the trauma-related information and will reach one of three options: assimilation, negative accommodation, or positive accommodation. Assimilation refers to the act of the individual incorporating the new trauma-related information into their previous worldviews, for example, holding him or herself responsible for the occurrence of the traumatic event. This is done in an attempt to preserve their view of the world as a just place and signifies a return to the individual's pre-trauma functioning. This outcome

indicates that the individual has not engaged in a process of meaning making and their assumptions regarding the world are left fragile and vulnerable to further traumatization. Conversely, accommodation refers to the shift in world views that occurs after a traumatic event; this change in perception can either be in a negative or growth direction. Negative accommodation denotes that the trauma-related information has resulted in a more negative world view, often associated with increased levels of psychopathology and distress. This outcome signifies that the individual has returned at a lower level of functioning than that which existed prior to the traumatic event. The final outcome, positive accommodation, occurs when the individual is able to use the trauma-related information to evolve and develop their world view, thereby leading to growth. This growth is typically marked by the individual's perception that they have achieved an enhanced understanding of the world and an increased appreciation for life, which occurs when the social environment has successfully met the needs of the individual.

Growth Research

As described previously, growth research has covered a wide range of stressful and traumatic events. In response to this variety of growth-related studies, a number of reviews have been conducted, including Linley and Joseph's (2004) review on positive changes following trauma and adversity. This review included 37 studies with results showing that growth is consistently associated with cognitive appraisals (i.e., threat, harm, and controllability), as well as specific coping styles (i.e., problem-focused, acceptance, and positive reinterpretation coping), optimism, religion, cognitive processing, and positive affect. Personality factors positively associated with growth were extraversion, openness to experience, agreeableness, and conscientiousness, while

neuroticism was negatively associated with growth. Evidence suggests that higher degrees of self-efficacy, self-esteem, hardiness, and optimism, are also positively associated with the development of growth. Analysis of socio-demographic factors reveals that women may be more likely to experience growth than men, as are younger respondents (i.e., older adolescences), and those with higher levels of education and income. Findings show that individuals who report and maintain growth subsequently experience lower levels of distress, however longitudinal research in the area of growth following adversity is lacking. The researchers advocate the development of theoretical models that provide a more comprehensive understanding of the process of growth following adversity and the underlying mechanisms that support this activity.

Heffernon, Grealy, and Mutrie (2009) also conducted a systematic review of growth and life-threatening illness. In total, 57 studies were included for analysis. The results showed that individuals who suffer from physical illness experience growth across four dimensions: (a) reappraisal of life and (e.g., individuals reevaluated their life and shifted their priorities); (b) trauma equals development of self (e.g., the development of a better and more authentic self); (c) existential re-evaluation (e.g., reflecting on meaning of life); and (d) new awareness of the body (e.g., heightened connection with the physical self). However, of these 57 studies, only 17 specifically aimed to investigate research regarding growth following adversity; the remaining 40 studies had instead found growth serendipitously while focused on other concepts (e.g., examining illness experience). The majority of the studies utilized a quantitative approach, with only three studies using a purely qualitative methodology, with the mechanisms underpinning the development of growth not being identified. Lastly, the researchers acknowledged that a threat to the

physical self may pose a unique stressor; influencing the associated growth that is likely to be developed, resulting in potentially unique dimensions of growth.

Taken together, the growth research demonstrates a considerable amount of evidence for the occurrence of at least one positive change after a traumatic experience. Indeed, the few longitudinal studies focused on growth that have been conducted reveal the majority of people (58-83%) who experience a traumatic experience report a positive change in at least one life domain (e.g., Affleck, Tennen, Croog, & Levine, 1987; Sears, Stanton, & Danoff-Burg, 2003). Generally, these positive changes revolve around social networks, with traumatic events resulting in stronger and more intimate interpersonal relationships (e.g., Helgeson, Reynolds, & Tomich, 2006; Sawyer, Ayers, & Field, 2010). Social support is posited to be advantageous for the development of growth by fostering a more favourable appraisal of the traumatic event as well as promoting more effective coping strategies (Prati & Pietrantoni, 2009).

Sport Injury and Growth

Despite there being no context-specific theories or models of growth following sport injury, there have been a few studies within the past 20 years that have explored this phenomenon (e.g., Galli & Vealey, 2008; Podlog & Eklund, 2006, 2009; Tracey, 2011; Udry et al., 1997). These studies have shown that while athletes do experience an array of negative consequences, they also experience a variety of positive outcomes as a result of their injury experience. A brief discussion of these studies, their findings, and implications will now be provided, followed by the limitations yet to be addressed by the existing research.

In 1997, Udry et al. explored the psychological reactions and self-identified benefits of injury among U.S. Olympic skiers who had sustained season-ending injuries. Three dimensions accounted for the findings. The first dimension, personal benefits, included gained perspective (e.g., realizing that skiing was important to them), personality development (e.g., feeling more mature and patient), enhancements in their life not related to sport (e.g., developing social relationships with others not involved in their sport), and gained better time management skills (e.g., easier to meet deadlines). The second dimension, psychological-based performance enhancements, included an increased sense of mental toughness/efficacy (e.g., improved confidence as result of recovering from injury), a heightened sense of motivation (e.g., feeling more ambitious to succeed), and amplified commitment to training (e.g., training more intensely). The final dimension comprised physical/technical benefits, such as an improvement in technical skills (e.g., more aware of technique), physical health (e.g., stronger as a result from injury rehabilitation programmes), and better awareness of body (e.g., learned body's physical limits).

Building on this research, Wadey et al. (2011) investigated injured athletes' perceived benefits, their antecedents and underlying mechanisms. Although there were certainly other studies conducted in the fourteen years between these two (e.g., Ford & Gordon, 1999; Hurley, Moran, & Guerin, 2007; Podlog & Eklund, 2006), this study was notable for being the first study to exclusively focus on growth, as well the antecedents and underlying mechanisms related to the benefits of injury. Wadey et al. (2011) examined three stages of the injury process: onset of injury, rehabilitation, and return to competition. At each stage of the process, a variety of antecedents and underlying

mechanisms were identified that helped the athletes cope with their current challenges, which in turn led to perceived growth. Injury onset included mechanisms such as self-disclosure, which led athletes to an increased sense of emotional intelligence. Additionally during this stage, actions such as researching their injury caused athletes to enhance their knowledge of anatomy and injury risk factors. The rehabilitation stage revealed a range of mechanisms and benefits, including strengthened social networks as a result of having more time to spend with family and friends. Other benefits included gained sport confidence as a result of practicing sport-specific skills, and an improved physical condition, resulting from adherence to their rehabilitation programme. The return to competition stage demonstrated mechanisms and resulting benefits, such as a renewed perspective on life which caused an increase in resilience. Athletes also reported that reflecting on their injury experience led them to become a more caring and empathetic person. This study helped to demonstrate how athletes are able to benefit from an experience that is potentially debilitating and transforming it into an opportunity for growth both as individuals and athletes.

In order to validate athletes' reports of growth, Wadey et al. (2012) subsequently explored coaches' views of injured athletes and their perceptions of injury-related growth. Coaches' perceptions of growth were categorized into four dimensions: personal growth, psychological growth, physical growth, and social growth. Personal growth included themes such as a developed belief in hard work (e.g., adhering to rehab programme will expedite recovery), a shift in attitude (e.g., feeling more positive about their sport), and gaining knowledge (e.g., acquiring better nutrition). Psychological growth included increased motivation (e.g., overcoming barriers to goal attainment),

improved confidence (e.g., greater belief in their sporting capabilities), and refined cognitive coping skills (e.g., regulating emotions). Physical growth consisted of athletes developing their physical attributes (e.g., better fitness), while social growth involved the athletes' development of their social network (e.g., better relationship between the athlete and coach). Interestingly while the coaches were all able to identify that their athletes had benefitted in some ways from their injury, they ultimately perceived that the injury was a negative event with debilitating consequences. This marks a significant distinction between benefits and growth, highlighting that the two concepts may not always work in conjunction, but rather that an athlete may experience benefits without also experiencing growth.

More recently, Salim et al. (2015a), sought to examine the relationship between growth following sport injury, hardiness, and coping using a quantitative approach. Results showed that athletes higher in hardiness experienced more growth and were able to do so by mobilizing and utilizing their social support networks; they were also able to evaluate their injury in more positive terms, as compared to those lower in hardiness. Subsequently, Salim et al. (2015b) explored why athletes higher in hardiness were able to experience higher degrees of growth by conducing follow-up interviews with a selected sample of athletes from the first study who were identified as having either high or low levels of hardiness. Findings revealed that higher hardiness athletes were better able to experience growth by disclosing their emotions to others, and expressed a prevailing belief that emotional expression was a positive endeavor. Conversely, lower hardiness athletes did not engage in emotional disclosure, reporting that doing so would burden others, be construed as a sign of weakness, earn negative appraisals from those around

them, and ultimately result in lasting undesirable consequences. Taken together, these studies help to extend previous research by showing how personal and situational variables can impact an athlete's recovery outcome and also provide valuable insight into the role applied practitioners may serve in the development of growth by highlighting the importance of social support within the recovery process.

These studies have demonstrated that athletes are able to use their injury experience as an opportunity for growth, providing an excellent starting point for future enquiry. However, as a field of enquiry it currently lacks any systematic research or a substantive theory to underpin it. As a result, the research conducted thus far has been largely atheoretical. In addition, studies have tended to focus on specific populations within the sport injury context; Udry et al. (1997), for example, only explored skiers, and Wadey et al. (2011) only explored male team sport athletes. Further, Salim et al.'s (2015a) only focused on one personality trait (i.e., hardiness) and failed to consider other personal and situational factors. Additionally, this study did not explore the specific dimensions of growth related to sport injury. Collectively, studies have either adopted the vantage point of sport injury being an extremely debilitating experience, or adopting a rather restrictive focus on the potential benefits of sport injury; thereby hindering the development of a more balanced approach that includes both the negative and positive outcomes of the sport injury experience. As a result, the aim of this programme of research is to adopt a more holistic approach that will unify the field of enquiry.

Summary and Recommendation for Future Research

Previous research has indicated that injured athletes experience cognitive, emotional, and behavioural responses to injury that can impact their ultimate recovery

outcome. Wadey and Hanton (2012) proposed at least four possible recovery outcomes for the injured athlete: never returning to competition; returning to competition below their previous level of functioning; returning to competition at the same level of functioning; or returning to competition above their previous level of functioning. It is important to note that experiencing growth does not solely equate to an improvement in athletic performance, growth can be experienced across a variety of different dimensions (i.e., personal, psychological, physical, and social). For example, although an athlete may return to sport at a pre-injury level of performance, indicating little to no growth, they may feel closer to their teammates, or have a renewed passion to play, both which may result in increased pleasure in sport participation.

This current programme of research is comprised of three studies designed to provide greater insight into the development of growth and how this process may be fostered. With the aim of developing a theory of growth following sport injury, particularly the growth athletes experience as a result from their injury, the following research aims underpin the research:

- To develop a context-specific theory of growth following sport injury.
- To systematically review evidence-based interventions that have successfully demonstrated the development of growth for a traumatized population, and identify what mechanisms can facilitate this process.
- To develop a practice-based contextual framework of the phases of development in an applied setting by exploring the experiential knowledge of sport

psychologists working with injured athletes and identifying what skills, strategies, and tools aid the promotion of growth in applied practice.

The purpose of this programme of research is to contribute to the field of sport injury in terms of theory development, research, and practice. The development of a theory of growth following sport injury would provide the basis for a more in-depth understanding of the injury experience, as well as create a theoretical underpinning for future research. There are a variety of ways in which theories benefit research, in particular by focusing it, being a catalyst for in depth enquiry, and fostering a parsimonious explanation; all of which would be advantageous to the field of sport injury and growth. Although there are existing theories of growth through adversity, these theories are not context specific and theories of the response to sport injury do not provide a comprehensive account of the growth process. A substantive theory for sport injury-related growth would help to unify the existing literature and foster a more cohesive field of research.

This programme of research aims to define and delimit one desirable recovery outcome- growth- and identify its antecedents, mechanisms, and consequences. This would help to shift the field from its previous preoccupation with the negative effects of injury and provide for a more complete, holistic perspective. Cultivating a more inclusive view of the sport injury experience, and understanding what, why, and how it contributes to these responses would help sport psychologists to improve their understanding of how to foster growth. Developing a theoretical model of growth following sport injury would also serve to guide future research in this field. A context-specific theory would also

provide greater assimilation between theory and practice, as well as answer key questions regarding the promotion of growth (i.e., why, when, where and how). Additionally, coaches, parents, physiotherapists, teammates, and even the athletes themselves may directly benefit from the current and future research through enhanced knowledge and understanding. Finally, injured athletes' optimal recovery and successful return to sport may be fostered as a result of research developments initiated by the current programme of research.

Chapter 3:

A Grounded Theory of Sport Injury-Related Growth

Abstract

Although previous research has shown that experiencing an injury can act as a catalyst for self-development, research that has examined the concept of sport injury-related growth (SIRG) remains largely descriptive. This study aimed to address this by developing a substantive theory to explain the processes through which injured athletes experienced SIRG. Using Strauss and Corbin's (1998) variant of grounded theory, 37 injured athletes competing in a range of sports and competitive levels participated in qualitative interviews. Interviews (N = 70) and data analysis were conducted over a period of 24 months. Transcripts were analysed using open, axial, and selective coding. Quality criteria used were fit, relevance, workability, and modifiability. The grounded theory produced (i.e., *Theory of Sport Injury-Related Growth*) suggests a number of internal (i.e., personality, coping styles, knowledge, and prior experience, and perceived social support) and external factors (i.e., cultural scripts, physical resources, time, and received social support) enable injured athletes to transform their injury into an opportunity for growth and development. The mechanisms through which this occurs are metacognitions, positive reappraisal, positive emotions, and facilitative responses. This theory offers a number of exciting avenues for future research, and provides medical personnel and practicing sport psychologists with a detailed explanation of how sport injury can lead to growth experiences.

Introduction

Over recent years, the positive changes experienced by athletes as a result of their injury experience has gained increased research attention (Wadey, Evans, Evans, & Mitchell, 2011). In one of the earliest studies to examine this concept, Udry, Gould, Bridges, and Beck (1997) identified three dimensions of self-development from analysing the interviews of U.S. Skiers who had sustained season-ending injuries. The first dimension, *Personal Growth*, was concerned with gaining perspective (e.g., realizing that skiing was important to them) and enhancements in life not related to sport (e.g., developing social relationships). The second dimension, *Psychological-Based Performance Enhancements*, involved an increased sense of mental toughness (e.g., improved confidence as result of recovering from injury) and commitment to training (e.g., training more intensely). The final dimension, *Physical/Technical Growth*, reflected improvements in technical skills (e.g., technical awareness), physical health (e.g., increased strength), and body awareness (e.g., recognition of physical limits). Subsequent research has extended these findings by revealing that both male and female team and individual sport athletes of various competitive levels and injury types have reported how injury can provide an opportunity for personal growth and development (e.g., Bianco, Malo, & Orlick, 1999; Podlog & Eklund, 2009; Tracey, 2011).

One of the challenges that the current body of research presents is the variety of terms that have been used when referring to growth, which include: “thriving” (Wadey & Hanton, 2014), “perceived benefits” (Wadey et al., 2011), “stress-related growth” (Galli & Vealey, 2008), and “post-traumatic growth” (Day, 2013). Unfortunately, the incongruous use of these terms with limited justification has increased the conceptual

ambiguity around the concept. To avoid perpetuating this practice and to develop a more unified body of literature, we propose the term *Sport Injury-Related Growth* (SIRG) to denote perceived changes that propel injured athletes to a higher level of functioning than that which existed before their injury. This heightened level of functioning can include psychological, social, physical, and behavioural changes (Pod- log & Eklund, 2009; Wadey, Clark, Podlog, & McCullough, 2013). The intention behind our proposal is to extend previous conceptualizations of growth that are solely concerned with psychological change (Tedeschi & Calhoun, 2004). Indeed, some of the positive changes that have been reported by injured athletes are physical (e.g., increased strength and conditioning) as opposed to psychological. Our conceptualization also extends previous dimensions of growth by embracing behavioural changes, which addresses recent recommendations to account for the connection between an individual's internal cognitive state and external behaviours (Hobfoll et al., 2007).

To elaborate, our reasoning for proposing the term SIRG is threefold: First, sport injuries and the rehabilitation context are unique, providing a set of experiences that are ideally viewed contextually through a lens that is sensitive to the rehabilitation process as well as the characteristics of the athletes themselves. For example, unlike many other traumatic and stressful events, athletes put themselves at risk of getting injured, typically experience multiple injuries throughout their career, and most subsequently return to sport (Savage, Collins, & Cruickshank, 2017; Wadey, Evans, Hanton, & Neil, 2012). Athletes also typically experience many stressors in the developmental stages of their careers, which may impact how they subsequently respond to adversity compared to other populations (Collins & MacNamara, 2012; Connaughton, Wadey, Hanton, & Jones,

2008; Howells & Fletcher, 2015). Second, we are interested in perceived change; that is, whether athletes believe they have changed in positive ways as a result of their injury experience. While some researchers are also interested in exploring perceived change, others are more concerned with discovering "actual" growth (e.g., Cohen, Hettler, & Payne, 1998; Frazier, Tennen, Tomich, Tashiro, & Park, 2009). To clarify, actual growth is concerned with the "reality" of growth and, rather than using retrospective self-reports of change, is assessed via a pre- and post-trauma change in self-report measures. We align with Tennen and Affleck (2002) who argued that although the notion of actual growth is a quaint one it is arguably secondary to people's perception in any case. Finally, we use the term SIRG to help create a more unified, identifiable, and context-specific conceptualization that provides a basis for researchers to more easily ground and advance their findings; a process achieved in other sport psychology areas of research to good effect (e.g., sport-confidence, Vealey, 2001; competitive stress, Mellalieu, Hanton, & Fletcher, 2006).

Given the growing empirical support for growth, it is perhaps not surprising that researchers have recently shifted their focus to exploring the mechanisms that underlie its effects (e.g., Galli & Reel, 2012; Howells & Fletcher, 2015, 2016; Salim, Wadey, & Diss, 2015a, 2015b; Tamminen, Holt, & Neely, 2013; Wadey et al., 2011; Wadey, Podlog, Galli, & Mellalieu, 2016). Some researchers have approached this by including injury alongside other stressors whereas others have exclusively focused on injury. With regard to the former, Tamminen et al. (2013) and Savage et al. (2017) interviewed athletes who had experienced a number of sport and non-sport specific stressors (e.g., performance anxiety, bullying, and eating disorders) and identified that a combination of personal

factors (e.g., positive outlook, meaning making abilities, and previous life experiences) and social support (e.g., perception of social support availability matching individual needs) affected athletes' perceptions of growth following adversity. However, given the diverse nature of the stressors, these findings may not reflect injured athletes' experiences. In relation to injury-specific studies, Wadey et al. (2011) found mechanisms specific to the context of sport injury, including increased free time, adhering to a rehabilitation programme, increasing knowledge of anatomy and injury prevention, and spending more time at training as a spectator. These findings not only enrich our understanding of the mechanisms underlying SIRG, but also reinforce the importance of researchers accounting for the context-specific nature of adversity.

The aforementioned studies draw on a number of formal models and theories of growth following adversity to interpret their findings, and recommend future researchers should examine their applicability in the context of sport injury (for a theoretical review, see Joseph & Linley, 2006). These include the Organismic Valuing Theory (Joseph & Linley, 2005) and Functional-Descriptive Model (Tedeschi & Calhoun, 2004). However, although these models and theories have assisted in explaining why and how individuals experience growth in a number of domains (for an empirical review, see Joseph & Linley, 2005), they do not account for the specific dimensions (e.g., physical growth) or mechanisms associated with SIRG (e.g., adhering to a rehabilitation programme). As a result, to gain a more complete understanding and explanation of SIRG, researchers need to look beyond existing formal models and theories and develop context specific theories grounded in the experiences of injured athletes. The purpose of this study, therefore, is to develop a context specific (i.e., substantive) and grounded explanatory theory that

explores and explains the relationship between sport injury and SIRG.

Methods

Philosophical Orientation and Methodology

Grounded theory (GT) was used to address the study's aim, which informed both the *process* (i.e., methodology) and *product* (i.e., theory produced) of the study. Although there is no singular definition of GT because of its many variants, most approaches are characterized by being systematic, inductive, and comparative, and aim to establish a theoretical framework that explains how and why persons, organizations, or communities experience and respond to events, challenges, or problematic situations (Holt, 2016). For researchers using GT, one of the challenges they face is that there are many variants of GT, with differing philosophical underpinnings, techniques, and strategies (Bryant & Charmaz, 2007). Holt and Tamminen (2010) recommended that the first decision for researchers planning a GT study is to select a variant that is consistent with their philosophical beliefs. As a result of the first author's personal beliefs (i.e., critical realism and modified dualism/objectivism), the Glaserian approach was ruled out for its realist philosophical perspective (Glaser & Strauss, 1965), as was Charmaz's (2006) constructivist approach. The approach decided upon was Corbin and Strauss' s (2008) variant (i.e., Straussian approach), which resonated with the first author's philosophical beliefs. To elaborate, the Straussian approach posits that "a theory is not the formulation of some discovered aspect of a preexisting reality 'out there' (Strauss & Corbin, 1998, pp.279)", as is the belief of the Glaser variant, nor is reality a singular construct held by the individual, as assumed by the constructivistic approach. Rather, theories are embedded in the history of the social collective and incorporate the truths and

assumptions of the group. Additionally, according to the Straussian approach, the role of the research is not to have any personal influence over the data collection or analysis, but instead, should aim to produce unbiased, replicable findings by minimizing their research presence. This is at odds with the constructivist approach, which places the researcher in a prominent position within the grounded theory process, thereby decreasing the ability for the findings to be replicated. For these reasons, which align with the researcher's own assumptions and beliefs, the Straussian variant was deemed the most suitable for the current research.

Participants

Criterion sampling was initially used to recruit "information rich" participants. By information rich, we mean participants who participate in sport, have been injured through sport, and self-reported that they have experienced SIRG (for more information, see Data Collection and Procedure). As the data collection progressed and initial concepts were identified, theoretical sampling was used thereafter to address gaps in the data and achieve theoretical saturation (Strauss & Corbin, 1998). To illustrate, early interviews consisted of athletes from team sports who had access to teammates who provided them with social support, which was suggested to be an effective resource to facilitate SIRG. As a result, we decided to interview individual athletes with limited access to teammates to challenge, refine, or extend the identified concept of social support. Other examples of theoretical sampling include seeking to interview athletes with certain demographics: (a) non-elite injured athletes because of elite per- formers reporting having access to several physical resources, (b) athletes with less severe injuries because participants with more severe injuries expressed challenges with mobilizing their social support, and (c) athletes

with no past injuries because of participants with a history of multiple injuries reporting using these experiences to inform how they (re)interpreted their injury.

In total, 37 (N = 37) injured athletes participated in this study (23 men, 14 women), all of whom were British. Participants' ages ranged from 19–39 years (M = 27.3, SD = 5.4) and represented a variety of sports: rugby, football, triathlons/endurance events, field hockey, cross country, badminton, mixed martial arts, rowing, cricket, track and field, tennis, figure skating, Gaelic football, baseball, volleyball, and gymnastics. Competitive levels ranged from recreational (i.e., local and regional clubs) to elite (i.e., competing at international events such as the Olympics). All injuries had been sustained through participation in sport and included fractures, dislocations, strains, and sprains of different body parts (i.e., knee, shoulder, back, hip, ankle, wrist, hamstring, elbow, stress fractures, broken cheekbone, and finger). Participants were at various phases of their injury at the time of the interview (i.e., injury onset, rehabilitation, and return to sport). Athletes interviewed at injury onset or rehabilitation were re-interviewed throughout their recovery and once again upon their return to sport.

Data Collection and Procedure

Following ethical approval, the first participant, a male professional rugby player who had previously torn his ACL through sport and was known to the first author, was contacted via email to participate in the study. He was considered "information rich" based on an informal conversation with the participant during which he revealed experiencing SIRG. Specifically, rather than using a questionnaire with pre-defined subscales, he was asked if he believed he had changed (i.e., psychological, social, physical, and/or behavioural) as a result of his injury experience, and whether he

considered these changes to be positive and/or negative and in what contexts and situations. He expressed that his injury experience bought him closer to his partner and had improved his physical strength, which aligned with our conceptualization of SIRG. As a result, written informed consent was elicited and a semi-structured interview was conducted to discuss his SIRG at a time and location of mutual convenience. The majority of subsequent participants were also asked if they had experienced SIRG before inviting them to participate; however, to gain a deeper understanding and challenge some of the identified concepts, some participants were recruited during injury onset or rehabilitation because they reported, for example receiving social support or experiencing positive emotions (see Figure 1). These injured athletes were subsequently re-interviewed during their recovery and upon their return to competitive sport; all subsequently reported experiencing SIRG during follow-up interviews.

Our rationale for using semi-structured inter- views was because they have been shown to be effective in understanding athletes' stories, through the rich, in-depth and complex data that they can generate (Corbin & Strauss, 2008). Specifically, the interview focused on athletes' injury experience (e.g., thoughts, feelings, and actions at various phases of recovery) and what, if any, changes were experienced as a result of the injury. Detail-oriented (e.g., "Who was with you?"), elaboration (e.g., "Can you give me an example?"), and clarification probes (e.g., Can do you mean by that?") were used throughout to develop a deeper understanding of participants' experiences and the contexts and situations in which they occurred (Sparkes & Smith, 2014). Over time, the interview guide evolved and became more refined to focus on emerging concepts and categories (Strauss & Corbin, 1998). However, some of the more common questions

across the interviews included: “Can you tell me about your injury experience?”, “Can you give me an example of one positive change you have experienced as a result of your injury experience?”, “Why do you consider this change to be positive?”, “How did this positive change come about?”, and “Who or what (if anyone/ anything) helped bring about this positive change?”

Data collection took place between January 2014 and January 2016, at which point data no longer yielded new concepts or insights (i.e., theoretical saturation; Corbin & Strauss, 2008). Every participant was interviewed face-to-face at a mutually convenient time and location (e.g., café, University office), and most participants (N = 31) were re-interviewed once or twice to further refine and extend our understanding of their experiences. In total, 70 interviews were conducted, lasting between 35 and 140 min. Each interview was recorded and transcribed verbatim.

Data Analysis

In line with grounded theory procedures, data analysis began after the first interview and continued in an iterative manner until all interviews had been conducted (Strauss & Corbin, 1998). Although in most cases interviews were transcribed and analysed before the next interview took place, sometimes it was challenging to do this because of the short time periods between interviews. In these cases, the first author listened to the participant’s audio file, made reflexive notes about the emerging concepts, and then debriefed with coauthors to refine the interview guide for the ensuing interview. Where time permitted, Strauss and Corbin’s (1998) more formal guidelines of open, axial and selective coding were used. Open coding consisted of line-by-line coding to identify concepts, their properties and dimensions. To begin, the raw data was broken down and

assigned a descriptive label, otherwise referred to as a code. These codes were then extracted and compared with other codes to determine any similarities or differences. Codes with similar meanings were linked together and, if they shared common characteristics, were organized into related features of a concept. These concepts are what form the building blocks of the theory. For example, any raw data identified as pertaining to "resources" were extracted and analysed to differentiate between separate categories of resources. As the data analysis progressed more categories were identified, and through a process of constant comparison were either placed into a pre-existing category based on similarities to the concepts in that category or formed the basis of a new category. All categories were given a descriptive label that referred to the concepts' essential characteristics to assist in the categorization process.

As key concepts were identified, data analysis evolved to focus on axial coding, which consists of reassembling the data and identifying relationships between the open codes (Strauss & Corbin, 1998). Axial coding takes the concepts that were identified during open coding and refines these into categories to provide a more complete explanation about the processes at work throughout the sport injury experience that may lead to SIRG. During this process of axial coding, the data was continuously compared with previous data sets. Finally, data analysis consisted of selective coding, a process of identifying the categories and focusing on establishing the relationships between these concepts (Strauss & Corbin, 1998). It is at this stage that the key themes are established as the core concepts with the lower order categories integrated and arranged to explain the relationships among the different categories of variables (Corbin & Strauss, 2008).

Several tools were used to facilitate the analytic process and enhance

methodological rigor. First, analytic memos were used to represent the first author's understanding and reflections of the data (Glaser & Strauss, 1967). Memo keeping has been reported to be critical in helping researchers to organize their thoughts and reactions to the data, and to assist understanding by encouraging reflexivity, clarification, category saturation, and concept development (Charmaz, 2006). The coauthors also acted as "critical-friends" by asking the first author to defend her interpretations during oral presentations and informal discussions about the findings. Third, the researchers used diagrams to visually represent the data and emerging themes throughout the analysis process to help the first author to think theoretically rather than descriptively. Finally, a delayed full literature review helped foster an inductive approach. Once the data collection and analysis was complete, an exhaustive literature review was completed to further inform and illuminate data analysis and interpretation (Holt & Dunn, 2004).

In addition to the aforementioned analytical strategies, and to further enhance the methodological rigor of the study, the resultant theory can also be subjected to a post hoc evaluation of research outcome using quality criteria recommended for grounded theory; namely fit, relevance, workability, and modifiability (Weed, 2009). Therefore, we encourage the reader to respond to the following questions: Do you believe the concepts and theory closely "fit" the phenomena of SIRG? Does the theory "work" in that it provides an analytical explanation of the relationship between sport injury and SIRG? Is the theory of "relevance" to injured athletes aspiring to return to their sport at a higher level of functioning? Are the concepts and theory amenable to "modification" to accommodate new insights gleaned through future research?

Results

Five key categories were identified: *sport injury, resources, metacognition and challenge appraisal, positive emotions and facilitative responses,* and *SIRG.* These categories suggest that sport injury is a stressful experience, and injured athletes' responses are influenced by internal and external resources. To encourage SIRG, these resources need to enable certain cognitive processes (i.e., metacognitions and positive reappraisals), which in turn affect subsequent cognitive, affective and behavioural mechanisms (i.e., positive emotions and facilitative responses). It is these processes that explain the relationship between the sport injuries experienced and SIRG. Figure 5 provides a schematic representation of these identified concepts and illustrates their relationships in the form of a substantive theory. These concepts are now explained to provide the reader with an in-depth understanding of the complex relationship between sport injury and SIRG.

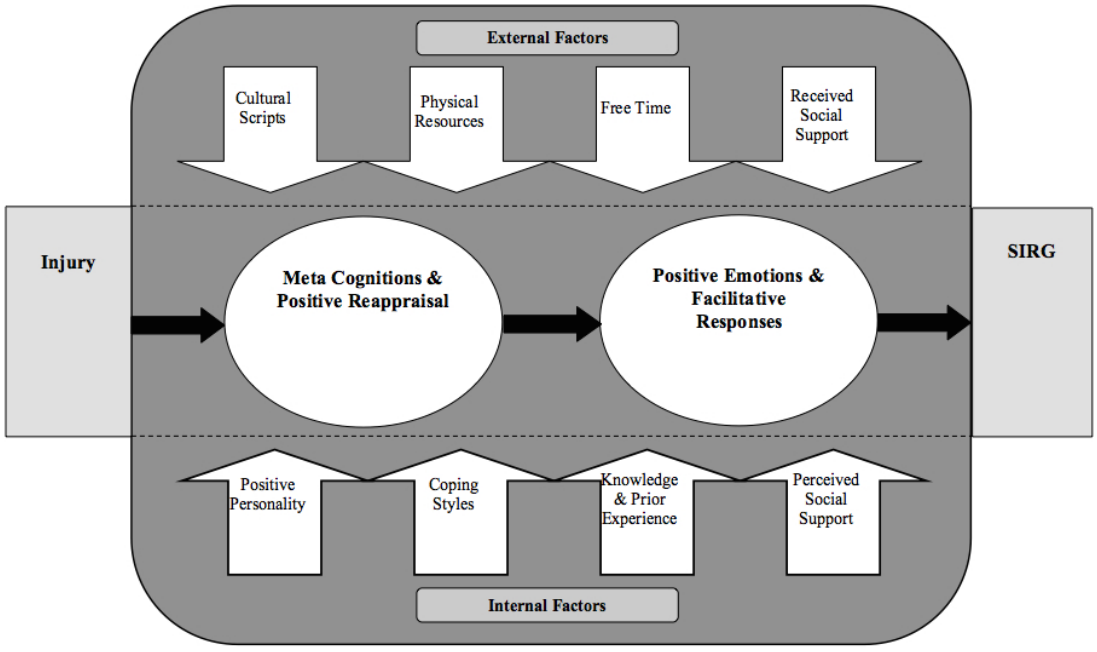

Figure 5. Grounded Theory of Sport Injury-Related Growth (SIRG)

Sport Injury

All participants reported that sustaining a sport injury was a stressful experience in that it threatened, reminded them, and encouraged them to reflect on their long- and short-term sporting goals (e.g., international, national, and regional events), beliefs (e.g., robustness of their body), and values (e.g., winning, competition, and training). In addition, all participants reported facing numerous stressors *throughout* their recovery, as well as creating stressors for others (e.g., the impact of their injury on their coach and teammates). In particular, the participants reported a high volume of stressors during the early stages of rehabilitation, which ranged from everyday chores such as preparing food and taking a shower, transporting themselves to and from the hospital and/or physiotherapist, to being isolated from the sporting environment. One participant reported in the first week after his injury:

> Interviewer: How did your injury affect you?
>
> Participant: You do not realize it until it happens to you, but injuries take over your whole life. Just the little things that you always could do, like taking a shower or making a cup of tea; I either cannot do it anymore or I need someone to help.

Responses to these demands included feelings of shock, frustration, anger, guilt, helplessness, and/or regret, which manifested themselves in the participants as well as from their interactions with others (e.g., coach, teammates). Typically, these responses were more intense and prolonged for more severe, reoccurring, and lower extremity injuries (e.g., greater mobility issues), as well as those injuries that happened at a critical point in the competitive season.

While the aforementioned factors influenced how the athletes' initially responded to their injury, it was how they reacted to these responses and future demands throughout their recovery that set them on their journey toward SIRG. However, despite the linear appearance of Figure 1, it is important that readers do *not* imply that injuries are stressful initially and are followed by SIRG. Rather the theory produced suggests the negative demands and responses not only trigger the development of SIRG, but also co-occur with the processes and experiences of SIRG (see Figure 1). To elaborate, the intermittent strain experienced by the participants throughout their recovery acted as a prompt for them (and others) to mobilize and remobilize the internal and external resources leading to SIRG. In addition, participants suggested that the stress they experienced during their recovery could be transformed into more facilitative responses that contributed to SIRG (for more information, see Positive Emotions and Facilitative Responses). In short, stress had an important role to play in the development of SIRG.

Meta-Cognition and Positive Reappraisal

The first core concept identified to lead to SIRG was *metacognition*. This concept refers to the athletes' knowledge of, and control over, their own thoughts. Indeed, rather than allowing certain concerns (e.g., I might not return to sport) and emotions to occupy their thoughts, the participants reflected on *what* they were thinking and *why* they were thinking and feeling the way they were; a process that was facilitated by conversations they had with members of their social support network. They reported that this process made them mindful of unproductive thought patterns and the importance of their sporting goals and aspirations, which, with the help of their internal and external resources, enabled them to rationalize their thoughts by normalizing their injury by considering how

the situation could be worse. Ultimately, this process allowed them to bring their thinking under their own perceived control. For example, two participants reported, “I thought, get a grip! I’ve been through so much worse in my life, with my Mum dying and losing my job and all that. So I decided I wasn’t going to let this injury get me down” and “I did get a little down at the start. But, at some point in your life, you have to decide how you’re going to react to things that go wrong. I just went, ‘Eh, it’s happened’. Hip injuries happen.” This awareness of and subsequent change in their thinking helped the participants’ to regulate negative emotions to a manageable level. In turn, and with the assistance of their internal and external resources, this allowed them to positively reappraise how they interpreted the situation they found themselves in. Rather than interpreting their injury as a threat and obstacle, they were able to identify possible opportunities and benefits that could be derived from being injured.

> Interviewer: So you now see your injury in a different light?
>
> Participant: Yeah, now I’ve sorted my head out, I’ve realized that time away from competition can be a good opportunity for me to work on the reasons why I’ve got injured the first place. So, I’ve decided I’m going to spend a lot of time working on my hip-flexors in the gym.

Positive Emotions and Facilitative Responses

From positively reappraising their injury and the circumstances surrounding it, as well as drawing upon their internal and external resources, the athletes subsequently reported experiencing positive affective states (e.g., confident, hopeful, optimistic, grateful, appreciative, inspired, uplifted, interested, excited, and curious). One athlete provided the following example of *hope* and *optimism*:

Interviewer: What happened next?

Participant: Once I got over the initial, “it sucks” phase, it was not too bad. Rather than looking at the glass half empty, I felt far more optimistic and upbeat that I’ll be back.

Interviewer: Optimistic and upbeat?

Participant: Yeah, confident that I’d get back, which was reinforced by my surgeon. He looked me right in the eye and told me that I would get back playing. He was so confident that I immediately felt hopeful. I could tell he meant it and he really cared.

Another participant provided the following account in terms of his *excitement*:

Interviewer: So, the way you viewed your injury changed?

Participant: Yeah, at first I was like, “Well this is shit,” but once I’d realized how it could be worse. I then got excited about how I could do these other things that I had been wanting to do but never could because sport was always in the way. So I started signing up for these camps and retreats and going sailing and all this stuff. I still really missed rugby but it was exciting that I got to do all these things that I’d always wanted to do.

Participants also reported taking a great deal of *interest* in their injury (i.e., injury itself, recovery process, and identifying successful role models) and how best to maximize their newly found free time (e.g., attend training as a spectator, spend time with significant others, engage in hobbies away from sport, work on sport-specific skills, and/or train non-injured body parts at the gymnasium).

Interviewer: You say your “thinking” changed?

Participant: Yeah, once I'd calmed down and reassessed the situation, I started thinking what can I learn from this?

Interviewer: What do you mean by 'learn from this'?

Participant: Well, I took a lot of interest in my injury to find the best way to complete my physiotherapy. I read articles. I read blogs. It was a case of I needed to find out anything I could. I really wanted to know what was happening to me, like what was actually going on inside my knee. It was all sort of new and I wanted to know, almost like, a detective, like, What's happened? Why did it happen? That sort of thing.

Other examples of positive emotions included feelings of *gratitude* and *appreciation* for the care and acts of kindness they had received from members of their support network (e.g., doing house chores, driving them around, buying them food, bringing gifts, and giving them their time) and by being *inspired* and *uplifted* by stories that they had observed or heard from other athletes who had returned to their sport above and beyond their pre-injury level of functioning. In some instances these athletes were personally known to the participant, in others they were a professional athlete who the injured individual admired.

Interviewer: Can you tell me more about [teammate]?

Participant: I saw what [teammate] went through when she got injured and how she came out the other side better for it. And now that I'm injured myself I can understand how hard that must have been for her. But she always had such a good attitude and she's been so encouraging to me now that I'm going through the same thing. She's been able to give me a lot of practical advice too. She's a real

inspiration.

These positive emotions in turn led to a number of facilitative responses, including seeking knowledge (e.g., books, journals, and former injured athletes), exploring and acting upon the opportunities available to them to make the most of their free time (e.g., visiting others or inviting others to their home, going to the gymnasium, working on other aspects of training, observing training and/or learning about training principles, and learning a musical instrument), engaging in purposeful reflection, using negative emotions in a facilitative way (e.g., guilt of letting teammates down provided the motivation to return-to-sport physically stronger), sustained efforts to adhere to their rehabilitation, and reciprocating acts of kindness. For example, the participants were thankful for the support received from members of their support group and appreciative of their acts of kindness, which led them to want to reciprocate. Supportive acts included gifts, cards of gratitude, taking the time to thank them, and spending time with and taking an interest in them. These acts led the participants to feel good about their relationships, which created further pro-social urges and uplifting experiences during their rehabilitation (e.g., giving and receiving positive comments).

> Interviewer: Tell me more about your relationship with your Mom?
>
> Participant: Well, my Mum helped me a great deal when I was injured. And I remember I had something on one weekend, but I decided to swap it and go and support my Mum. She sings in a choir and I've never supported her. And I thought, I need to do something, give something back to her. And so I went to watch and it was nice, because I think she felt supported. And it felt good to give something back.

Internal Resources

Four internal resources were identified to influence the metacognitions and positive reappraisal, and positive emotions and facilitative responses (see Figure 1). However, the reader should *not* interpret from Figure 1 that each participant utilized all four internal resources or used them all at one time. Rather, certain resources were relied on more heavily by certain participants and at specific times throughout their recovery. For example, some participants reported having a more refined coping style, extensive knowledge and prior experience of injury, and greater awareness of available support. These resources were also found to be amenable to change, influenced by external factors, and interrelated. For example, those with a more extensive experience of injury reported a more refined coping style. However, while these resources were participant-dependent, contextually derived, amenable to change, and interrelated, they all had an important role in the development of SIRG.

The first internal resource identified, *Personality*, refers to the participants' personal qualities of confidence, creativity, resilience, social intelligence, openness to experience, extraversion, optimism, reflexivity, and emotional intelligence. These qualities enabled the participants to understand and express their emotions, be creative in how best to maximize their free time and approach problems, be open to and act upon opportunities in the environment, remain resilient and confident that they could overcome adversity and elicit positive benefits, and understand the importance of give and take in relationships. For example, one participant described his typical response in the face of adversity, "I see the good in things; otherwise you can get so frustrated. There's no point in getting angry, just enjoy the experience. Don't try to make it any worse for yourself.

Just relax and see what opportunities arise." In relation to her resilience, another reported:

> Interviewer: You say "resilient," what do you mean by that?
>
> Participant: Yeah, I think I'm a pretty resilience person. It [injury] was not fun and there were some bad days but I decided that I was not going to let it get to me. There are people out there a lot worse off than I am. I knew it was not the worst thing that could ever happen to me. Yeah, I'd say I'm a pretty resilient person in general.

Personality also informed the second internal resource, *Coping Styles,* which reflected the participants' typical thoughts and behaviours in response to stressful demands. Participants coping styles reflected those of emotion-focused (e.g., meaning making, emotional venting, seeking support for emotional reasons, and/or turning to religion) and problem-focused (e.g., planning, active coping, and seeking support for instrumental reasons). For example, one participant reported how he turned to religion, "I often pray and go, 'What's happening?' And as I understand my religion more, I realize sometimes in life these things happen, and I believe that something positive will come out of this."

The third internal resource, *Perceived Social Support*, referred to participants' awareness and appraisal of the quality of support available to them. Indeed, the participants had learned from their past experiences and who in their support network could and would help if needed. This knowledge was reported to help the athletes rationalize and control their thinking by reassuring them that they had the resources to cope, instilling positive emotions (e.g., optimism and confidence), and fostering facilitative responses (e.g., sustained efforts to adhere). Furthermore, reflecting on their

past experiences and drawing upon the lessons learned was identified as the fourth internal resource: *Knowledge and Prior Experiences*. This knowledge was suggested to help enable participants to normalize their in- jury by recognizing that injury is part-and-parcel of sport, imagine how it could be worse by comparing their injury to other stressful events that were perceived to be more "traumatic," and instill a sense of confidence that they could come back from their injuries physically and mentally stronger by drawing from other growth-related experiences. The past experiences the participants drew upon were both sporting (e.g., injury, illness, and losing major championships) and nonsporting critical incidents (e.g., death of loved one, relationship breakup), and had either occurred to them directly or vicariously (e.g., witnessing a team- mate overcome an injury).

> Interviewer: Sounds like you've been through a lot in your life?
>
> Participant: Yeah, and I decided that my injury was not going to get me down. I have had a lot thrown at me in my life, which has got me down. Someone close to me died when I was 17, and I had to fight my way back from that. So I've already come through some of the hardest things that you can come through, so an injury—it's nothing really. It's just an inconvenience and more of an annoyance than anything else. I knew I would be able to cope with it.

External Resources

Four external factors were identified to affect the processes leading to SIRG: *Cultural Scripts*, *Physical Resources*, *Received Social Support*, and *Time*. However, each participant did not have access to all or were only aware of some of these resources, and some relied more heavily on certain external resources than others. For example, the more elite athletes were more concerned with using physical resources (e.g., gymnasium)

to achieve certain SIRG outcomes (e.g., physical growth), whereas some of the non-elite athletes did not have the same access to these resources and decided to invest their free time elsewhere. The four external resources were all context-dependent, interrelated, amenable to change, and influenced by the participants' internal resources.

The first external resource, *Cultural Scripts*, refers to narratives embedded in the participants' sporting culture that reflect triumph over adversity. The participants reported that these narratives stemmed from televised events (e.g., Paralympics Games and Invictus Games), films (e.g., Rocky, Any Given Sunday), drama series (e.g., Friday Night Lights), celebrity autobiographies (e.g., Lance Armstrong, *It's Not About the Bike*; Kelly Holmes, *Black, White, and Gold*), and stories shared within the sporting culture of former athletes' successful recovery outcomes. The plot of the stories was success-against-the-odds and tales of struggle and ultimate glory. The participants knowingly embodied these stories and drew upon them to help identify and act upon opportunities, as well as induce affect (e.g., inspiration) and facilitate adaptive responses (e.g., using their negative emotions in a facilitative way).

> Interviewer: What was it that you watched?
>
> Participant: I watched *Friday Night Lights* and it's funny because I see a lot of similarities between my situation and the quarterback who got injured. Obviously, my injury was not as bad as his and I know it's a T.V. show, but that character really inspired me. What he went through and how he never gave up. I decided then and there that I would come back from this stronger than I was before.

The second external resource, *Physical Resources*, refers to a variety of environmentally based resources. These resources included transport, Internet, TV,

medical care (e.g., National Health Service and private hospitals), and the availability of and accessibility to a gymnasium and specific rehabilitation equipment. These resources helped facilitate the processes leading to SIRG by providing educational material, access to inspiring stories, and transport to their social support network and training facilities, which helped rationalize strain responses, instill and heighten positive emotions, and promote facilitative responses. One athlete reported, "I watched a lot of YouTube the first few weeks. Videos on patella tendon snaps. I saw videos of it actually happening, videos of the surgery, videos of the rehab process, and athletes jumping after 9 months." Another important environmental resource to facilitate the growth process was *Received Social Support.* Athletes reported receiving two types of social support— emotional and tangible—that helped the participants to reappraise their injury, provide uplifting experiences throughout their rehabilitation, and instill and reverberate positive emotions through their social exchanges that conveyed gratitude and inspiration. Although it may appear in Figure 1 that positive emotions are solely manifested in the individual (i.e., through metacognitions and positive reappraisal), it is also important to note that these emotions influenced and were influenced by others in their social support network. Specifically, emotional support included listening, encouragement, sympathy, and challenge. One participant commented, "I mainly talked to my girlfriend who helped me release and understand my emotions, and channel them in a more positive way." Tangible support took the form of assistance of a practical nature (e.g., help with daily life, car rides to doctor's appointments):

Interviewer: Can you tell me more about your fiancé?

Participant: My fiancé was really great, very helpful. Usually, I'm the one doing

the cleaning and the cooking, but he's really stepped up and he'll do the things that I cannot do anymore, like the hoovering. I know he doesn't like doing it but he doesn't complain and it's reminded me how much he actually does love me and takes care of me, which has been really nice.

The final external resource was *Time*. Indeed, all participants reported a significant change in the amount of personal free time available to them from not training, competing, and participating in other sport-related activities. One participant stated, "I've got all this free time just to do things I couldn't really do before." For many athletes this meant more time to devote to personal pursuits (i.e., non-sport related hobbies such as painting, writing, playing a musical instrument) and/or with their family and friends outside sport, which helped mobilize the factors and mechanisms associated with SIRG:

Interviewer (probe): So what did you do with your free time?

Participant: Well, for the first five weeks it was amazing. I was talking to people more than I usually do. And people were coming [SEP] to me to talk about other things. It was really nice. It was really novel. And I liked that. . . . It was not necessarily more people; it was just when I talked to my friends I talked to them for longer.

Interviewer: Was that the main thing you did with your free time?

Participant: No, I also started painting and writing a lot more, which I used to do when I was younger. And it helped me to calm down and get my emotions out. Getting it down on paper and out of my head would just help me get my thoughts in order. And I've kept it up, especially the painting, it really helps calm me down

and think things through.

Sport Injury-Related Growth

Facilitated by the previous processes and internal and external factors, participants reported a number of interrelated themes of SIRG. An interesting find was that what was clear from the findings was that growth meant different things to different participants. For example, some participants reported strengthening their relationships with significant others, while others reported a weakening or detaching from relationships with others as a benefit of their injury (e.g., learning who were not your real friends). It is also interesting that those participants who had returned to sport for some time felt that their SIRG could help them adjust to and cope more effectively with other demanding situations (e.g., relationship breakdown, being dropped from the team), as well as be used to offer other athletes and non-athletes support during stressful situations. In contrast, those participants who had only recently returned to sport had yet to realize the potential application of their SIRG to other contexts and situations.

Collectively participants reported a number of interrelated SIRG themes. These themes related to psychological-, social-, physical-, and behavioural-changes. Behavioural changes comprised *Pro-Social Behaviors* (i.e., helping others in need) and *Health Behaviours* (i.e., engaging in healthy behaviors, avoiding unhealthy behaviours). One athlete reported, “I now look after myself. I eat right, stretch and do my warm ups. And make sure I get enough sleep and take some time for myself, little things like that that add up but can really affect you.” Physical changes focused on *Strength and Conditioning* (i.e., strength, flexibility, range of motion, muscular/body control, cardiovascular fitness, and speed). One participant reflected: “I did a lot of specific

strength-work, which I hadn't really been doing before. I spent a lot more time doing that. I had to build it up gradually, and I came back a much stronger runner than before."

Psychological and social changes comprised *Intelligence* (e.g., sport-related, injury-related, social, and emotional), *Social Relationships* (e.g., positive relations with others, detaching from negative relationships), *Personal Strength* (e.g., resilience, mental toughness, personal growth, acknowledging weaknesses, and expressing emotions), *Body-Self Relationship* (e.g., listening, understanding, and being more compassionate of one's body), *Self-Acceptance* (i.e., self-understanding and acceptance), and *Purpose and Appreciation of Life* (e.g., purpose in life, appreciation of life). Three participants commented, "I appreciate from my injury and operations that my life doesn't need to be dominated by sport and the need to play sport. There are more important things in life, like spending time with my friends" (i.e., *Purpose and Appreciation of Life*); "I listen to my body now. I know how much pain is too much and when to stop so I don't get injured. Before I would keep going and that's what got me injured in the first place" (i.e., *Body-Self Relationship*); and "I definitely feel closer to my friends now. Them being there for me when I was complaining and helping out with things, I really feel like I can rely on them" (i.e., *Social Relationships*). Finally, another participant suggested his ACL injury led to him focusing on a new career path away from sport.

> Interviewer: What changes, if any, have you experienced?
>
> Participant: The whole situation has been quite life-turning for me. Because now, I want to go into medicine to become an orthopedic surgeon specializing in the knee. . . . Being injured has made me want to learn all about the knee and to go into that line of work. . . . As a person, I feel I'm more content now. I know what I

want to do and I feel happier be- cause of that. I think that's the biggest change. Because I knew what I enjoyed before but I didn't really know what I wanted to do, and then this happened.

Discussion

The aim of this study was to develop a grounded theory that explains the complex relationship between sport injuries and SIRG. The theory produced (i.e., *Theory of Sport Injury- Related Growth*) makes a significant contribution to previous research by identifying the mechanisms (i.e., metacognitions, positive reappraisal, positive emotions, and facilitative responses), as well as the internal and external factors that can affect SIRG. The theory suggests that injured athletes who experience on-going strain during their recovery but have certain internal and external resources are more likely to experience SIRG through a number of specific mechanisms. That is, injured athletes are more likely to experience SIRG if they have certain dispositional qualities (e.g., optimism, creativity, and proactive), available physical resources (e.g., gymnasium and rehabilitation equipment), previous experience of adversity to draw upon, emotion- and problem-focused coping styles (e.g., meaning-making, emotional venting), an effective social support network, and access to narratives that reinforce the potential for positive outcomes. Possessing, embodying, and mobilizing these resources in their free time during recovery was identified to help the athletes to challenge negative thought-processes, and foster positive emotions and facilitative responses that encouraged SIRG.

Although the grounded theory produced is novel (see Figure 1), its concepts do resonate with a number of other theories and models. For example, Wiese-Bjornstal, Smith, Shaffer, and Morrey's (1998) Integrated Model of Response to Sport Injury,

which is one of the most comprehensive models of athletes' responses to injury, hypothesizes that athletes' responses to injury and rehabilitation are influenced by personal and situational variables that in turn affect the way athletes' think, feel, and act through a process of appraisal. Indeed, there is empirical support for the effect of a number of personal (e.g., injury severity, personality, motivation, athletic identity, and coping strategies) and situational factors (e.g., provision of social sup- port, rehabilitation environment) on injured athletes' responses (for reviews, see Evans, Mitchell, & Jones, 2006; Wadey & Evans, 2011), which are consistent with the internal and external resources illustrated in Figure 1. However, despite the merits of this model and its contribution to our enhanced understanding of athletes' responses to injury, the model is descriptive rather than explanatory in nature. In addition, the model was never developed to explain how SIRG occurs or indeed suggest the specific internal or external factors that might influence its development.

There are also a number of theories and models of growth after adversity; most notably the Functional-Descriptive Model (FDM; Tedeschi & Calhoun, 1995) and the Organismic Valuing Theory (OVT; Joseph & Linley, 2005). In support of Figure 1, these theories suggest the importance of social environmental conditions, successful coping efforts, and cognitive processing to support growth through adversity. However, in contrast to the present findings and based on Janoff-Bulman' s (1992) theory of shattered assumptions, these theories hypothesize that the main mechanism leading to growth is the shattering effect on a person's assumptive world (e.g., goals, beliefs, and assumptions). This shattering effect leads to ruminative activity that can be distressing, which is indicative of cognitive activity that is directed at rebuilding pre-trauma schema and

allowing new world-views to emerge (i.e., growth after adversity). Despite injury threatening athletes' beliefs and goals in this study, our findings do not support the theory of shattered assumptions. One possible reason for this is that the theory explains responses to *traumatic* events, and perhaps sport-related injuries are not sufficiently traumatic to shatter athletes' assumptive worlds. However, since the sample used in this study all returned to sport following injury it might be that the OVT and FDM are more applicable to career-ending injuries. Another potential reason is that the theory of shattered assumptions simply does not explain growth after adversity. Indeed, Wortman (2004) reported on the basis of her own empirical work, ". . . it is my clear impression that those whose assumptions about the world have been most shattered by the event–those who experienced a sudden dramatic loss–are far less likely to experience growth" (p. 85). As a result, Wortman recommended that future research should consider other factors that may be important in promoting growth, suggesting "The more we can learn about what promotes growth, the more we can intervene effectively among people who have experienced life experiences" (p. 86).

The mechanisms found to lead to SIRG in this study were metacognitions and positive-reappraisal, and positive emotions and facilitative responses. These findings support and extend the research of Salim and associates (Salimet al., 2015a, 2015b), Fredrickson's (1998) Broaden and Build Theory of Positive Emotions, and Dweck's work on growth mindsets (2006). Indeed, Salim et al. (2015a) recently examined the relationship between the personality trait of hardiness and growth after sport injury. As hypothesized, findings revealed a significant positive relationship between hardiness and growth. The mechanisms underpinning this relationship included positive reappraisal and

positive emotions. Not only does do these findings support Figure 1, but they also support Fredrickson' s Broaden and Build Theory of Positive Emotions. Fredrickson's theory implies that positive emotions not only "broaden" an individual's momentary thought-action repertoire but also "build" an individual's resources (e.g., growth following adversity). However, despite its relevance to a sport injury context, it is important to note that Fredrickson's theory did not set out to explain growth, or what personal and situational factors might generate positive changes. Nevertheless, the inclusion of positive emotions in the context of sport injury is an unexpected finding, not least because research has largely denoted injury in terms of negative emotions (Evans & Hardy, 1995). Examining the more adaptive (and perhaps maladaptive) role of positive emotions is an exciting area for future research that has the potential to inform new directions of enquiry. For example, one area of investigation identified in this study that warrants attention is that emotions are not only manifested within the individual, but socially and relationally (cf. Coulter, 2008; Gergen, 2009; Tamminen et al., 2016). This finding extends Wiese-Bjornstal et al.' s (1998) integrated model that views emotions at an individual level. Future research should examine post-injury emotions as social phenomena. Similarly, the results of this study resonate with Dweck's theory of growth mindsets (2006), as it can be argued that the athletes of this study were able to develop SIRG due to possessing growth mindsets prior to sustaining injury. According to Dweck's theory, these individuals will have been predisposed to recognizing their injury as a challenge and be more persistent in the face of failure. It may therefore be advantageous to discover how growth mindsets may be encouraged for injured athletes in order to better promote SIRG.

The present study has a number of significant strengths. Its main strength is that it has developed an original and substantive theory of SIRG that informs research and practice. Indeed, the psychology of sport injury literature has remained largely atheoretical to-date (Brewer, 2010; Wadey & Evans, 2011). It is hoped therefore that the theory of SIRG will help to better inform programmes of research and the interpretation of future findings. And by having developed a deeper and enriched explanation of injured athletes' experiences, practitioners are in a stronger position to bridge the gap between theory-and-practice. In terms of limitations, one potential limitation of this theory is its linear appearance; therefore, future researchers should seek to examine potential reciprocal relation- ships between concepts. Other future avenues of research include using alternative qualitative traditions (e.g., ethnography), methods (e.g., visual methods), and forms of representation (e.g., creative nonfiction) to further enhance our knowledge and understanding of SIRG. Indeed, Figure 1 is open to extension and can be tested and modified to accommodate new insights. Finally, future research could also seek to identify interventions that sport psychologists might use to foster SIRG in athletes, and explore the challenges of integrating this concept into professional practice. For example, there might be inherent dangers in promoting SIRG, which is perhaps best summed up by Wortman (2004) who discusses the impact growth might have on survivors of traumatic and stressful experiences:

> Our culture champions people who are strong, invulnerable, and independent in the face of adversity. . . . Yet there are dangers inherent in these views. First, we have to consider the burden such views place on survivors. Even without these notions of growth, survivors often suffer at the hands of others who expect them

> to be recovered from the trauma or loss rather quickly. If they show distress, they are often regarded as poor copers who are wallowing in their pain. . . . If outsiders believe that growth is prevalent, this can become a new standard that survivors' progress is measured against. Such a standard may lead to negative judgments toward those who do not show personal growth, making them feel like coping failures. (p. 88–89)

Wortman's comments resonate with sporting cultures that have been identified to revere positivity (Coulter, Mallett, & Singer, 2016; Douglas & Carless, 2009; Mankad, Gordon, & Wall- man, 2009). For example, Mankad et al. explored perceptions of emotional climate among injured athletes and found that injured athletes felt they had to suppress expressions of negativity for fear of the negative reactions of others. Rather, they were expected to display intense positivity and confidence. Thus, social-cultural environments can govern athletes' stories, silencing some and amplifying others. Although SIRG may further amplify stories of positivity after injury and perhaps indirectly inhibit others, it is important that it is not used in a way as to inhibit athletes' experience of and recovery from injury. Labeling injured athletes as "failures" if they do not experience SIRG could result in poor mental health outcomes (Mankad et al., 2009; Salim et al., 2015b). As recommended by Brown, Gilbourne, and Claydon (2009), all injured athletes need to be afforded the space and opportunity to share their stories, which should be met with support, understanding, and empathy (Wadey & Evans, 2011).

In conclusion, this study has developed a theory that explains how an injury can lead to the growth and development of self (i.e., *Theory of Sport Injury-Related Growth*). This study extends previous research in a number of important ways. First, the study

proposes the concept, *Sport Injury-Related Growth*, to create a more unified, identifiable, and context-specific conceptualization of growth following sport injury. Second, the theory produced is novel and can be used to inform future research and create greater congruence between theory and practice. Third, the analysis has identified a number of mechanisms for SIRG. For example, the findings suggest that positive emotions play a crucial role in athletes' recovery from injury, which has been overlooked in the sociology and psychology of sport injury literature. Finally, the findings identify a number of internal and external factors that can affect the likelihood of experiencing SIRG. Although researchers have previously identified personality and social support to have an important role in SIRG (e.g., Salim et al., 2015a; Wadey et al., 2011), a number of original factors have been identified in this study including cultural scripts, knowledge and prior experience, and coping styles. Future researchers are encouraged to utilize this theory to inform new directions of enquiry in the quest to better understand, explain, and support athletes' recovery from injury.

Chapter 4:

Interventions to Promote Growth Following Adversity: A Systematic Review of Evidence-Based Practice (Study 2)

Abstract

Sport Injury-Related Growth (SIRG) has become a popular concept in the psychology of sport injury literature. However, while our conceptual and theoretical knowledge has expanded (i.e., Study 1), our understanding of evidence-based interventions to promote growth in injured athletes remains limited. The purpose of this review, therefore, is to systematically review interventions aimed at promoting growth in other populations who have experienced a traumatic or stressful event. This knowledge will help towards creating a more congruent alignment between the *Theory of Sport Injury-Related Growth* (i.e., Study 1) and professional practice, thereby providing practitioners with potential interventions that might foster SIRG when working with injured athletes. A comprehensive search for relevant literature was conducted and studies were selected for inclusion based on preplanned criteria. This process yielded 37 studies. The interventions employed within these 37 studies comprised emotional processing, cognitive strategies, or combined techniques. Important considerations for interventions included the timing and duration of the intervention in relation to the traumatic event and the importance of the intervention meeting the clients' needs. How these interventions relate to the theory generated in Study 1 are critically discussed, together with the need for practice-based evidence in future research.

Introduction

Athletes are presented with numerous challenges throughout their sporting career, such as competitive stress, financial pressures, and schedule demands (Collins, MacNamara, & McCarthy, 2015). While adversity is generally considered to be an undesirable occurrence, research has highlighted the ways in which facing such challenges serves to elevate athletes and bolster higher levels of functioning, including sport performance (e.g., Fletcher & Sarkar, 2012). This programme of research is specifically interested in one type of adversity (i.e., sport injury); the ways in which injury serves to as a platform for Sport Injury-Related Growth (SIRG). SIRG refers to perceived changes that propel athletes to a higher level of functioning. These changes can be psychosocial, behavioural, and physiological improvements an athlete can experience as a result of navigating their injury experience.

Study 1 (see Chapter 3) of this programme of research produced a theory, the *Theory of Sport Injury Related Growth*, which shows that athletes experience SIRG through four mechanisms and eight internal and external factors. The mechanisms that encourage growth are metacognitions (i.e., awareness and control over thoughts), positive reappraisal (i.e., recognizing opportunity in injury), positive emotions (e.g., interest), and facilitative responses (e.g., exploration). A combination of internal (i.e., personality, coping styles, knowledge and prior experience, and perceived social support) and external factors (i.e., cultural scripts, physical resources, time, and received social support) influences the injured athlete's metacognitions and positive reappraisal, helping the individual to recognize the potential for development and growth. Drawing on and engaging in these internal and external factors help injured athletes to combat the strain

of sport injury by becoming aware of and directing their thoughts in a manner that encourages positive reappraisal. The athlete will then experience positive emotions, which create a desire in athletes to reinvest in their resources. In this way, they begin a process of continuous re-engagement that ultimately results in the establishment of growth. Yet, while this theory is original and significantly extends the literature focusing on the relationship between sport injury and SIRG, it is limited in that it does not suggest potential interventions for promoting SIRG.

Although SIRG has been found to be context-specific, one approach to help identify evidence-based interventions and facilitate knowledge transfer from mainstream psychology is to systematically review interventions that aim to foster growth following adversity in other domains of research. While this programme of research is specifically interested in the concept of SIRG, there are no published studies in which to conduct a systematic review in this area. To better understand growth-related interventions, the purpose of this study is to systematic review evidence-based interventions aimed at fostering growth for traumatized populations. Evidence-based interventions are defined as treatments underpinned by efficacy research (Barkham & Mellor-Clark, 2003). Specifically, the goal of efficacy research is to examine whether a particular intervention has a specific, measurable effect and also look to address issues of the safety, feasibility, and side-effects of the intervention. To date, no systematic reviews have been conducted that aim to collate and summarize data from studies directed at fostering growth. Therefore, the aim of this study is to locate, organize, and synthesize studies designed to promote growth to identify the intervention strategies most efficacious for encouraging growth among individuals who have experienced a traumatic or stressful event. This

review draws from an assortment of trauma types to best determine the intervention likely to be most successful in encouraging growth after a challenging event.

Methods

Design

Systematic reviews aim to identify and summarize studies that are pertinent to a certain topic of research by following a rigorous protocol that reduces bias and random error (Hefferon, Grealy, & Mutrie, 2009). Systematic reviews are considered an objective, replicable, systematic, and comprehensive approach that aims to limit reporter bias and random error, developing stronger links between research evidence and practical application (Cook, Mulrow, & Haynes, 1997). Furthermore, systematic reviews allow for large amounts of findings to be evaluated in combination (Mulrow, Cook, & Davidoff, 1997). For these reasons, a systematic review was deemed the more appropriate methodology in which to address the research question.

Inclusion Criteria

For the purposes of this review there were four inclusion criteria. First, the study had to be an intervention (i.e., the activities were focused on inducing change; Petitpas & Tinsley, 2014). Second, the intervention had to be directed at those who had experienced the traumatic or stressful event first-hand rather than indirectly (i.e., vicarious trauma). Third, one of the aims of the study had to be to promote growth. Finally, the study had to be published in a peer reviewed journal and be available in English; unpublished studies, dissertations, and conference abstracts were omitted. Although this latter approach presented a publication bias (Sterne, Egger, & Smith, 2001), obtaining copies of unpublished work was considered impractical. In addition, unpublished work and non-

peer reviewed publications, such as conference abstracts, are unlikely to have been evaluated with sufficient rigor to safeguard the efficacy of the intervention (Scharf, Chapman, Collins, Limanowski, Heaney, & Goldenhar, 2008). Gathering and translating documents written in foreign languages was also considered impractical for the purposes of this study.

Search Strategy

To ascertain appropriate studies, three methods of research gathering were used. From March 2016 to July 2017, research papers were identified and gathered by searching the following electronic databases: PsycINFO (2001 to July 2017), PsycARTICLES (2005 to July 2017), SPORTDiscus (2001 to July 2017), Web of Science Core Collection (1993 to July 2017), and the Cochrane Library (2005 to July 2017). In line with guidelines for conducting systematic reviews and to ensure database saturation (e.g., Edwards, Hannigan, Fothergill, & Burnard, 2002), the literature search included specific keywords related to the eligibility criteria. Keywords comprised post-traumatic growth, stress-related growth, adversarial growth, benefit finding, perceived benefits, positive outcomes, thriving, and well-being. These terms were each combined with the following keywords related to interventions: intervention, program/programme, therapy, counseling/counselling, and treatment. The primary search was conducted using the following combination of search strings:

String 1: Post-traumatic growth* OR Stress-related growth* OR Adversarial Growth* OR Benefit finding* OR Perceived benefits* OR Positive outcomes* OR Thriving* OR Well-being

String 2: Interventions* OR Program/Programme* OR Therapy* OR Counseling/Counselling* OR Treatment

The second method of searching for relevant studies involved manually exploring germane journals such as: *Cognitive Therapy and Research* (1977 to present), *European Journal of Cancer Care* (1992 to present), *Health Psychology* (1982 to present), *Journal of Adolescent* (1978 to present), *Journal of Clinical Psychology* (1945 to present), *Journal of Consulting and Clinical Psychology* (1937 to present), *Journal of Loss and Trauma* (2001 to present), *Psycho-Oncology* (1992 to present), and *Journal of Personal and Interpersonal Loss* (1996-2000). Finally, a search strategy known as pearl growing (Ramer, 2005) involved examining the reference lists of the eligible full texts to identify any additional studies that might meet the inclusion criteria.

Shifting of Research Papers

Potentially appropriate papers were evaluated by title, abstract, and full text (see Figure 6). To begin, possible eligible studies were gathered and assessed for suitability based on information provided in the title of the article. The abstracts for the papers that had not been eliminated were then collected and read to determine their suitability for inclusion based on the same set of criteria. Those studies that did not meet the eligibility requirements were excluded. Next, the full text for the remaining papers were obtained and read to ensure that the studies satisfied the eligibility criteria. The principal literature search and eligibility assessments were conducted by the primary researcher, with two supervisors providing assistance in evaluating any ambiguous information.

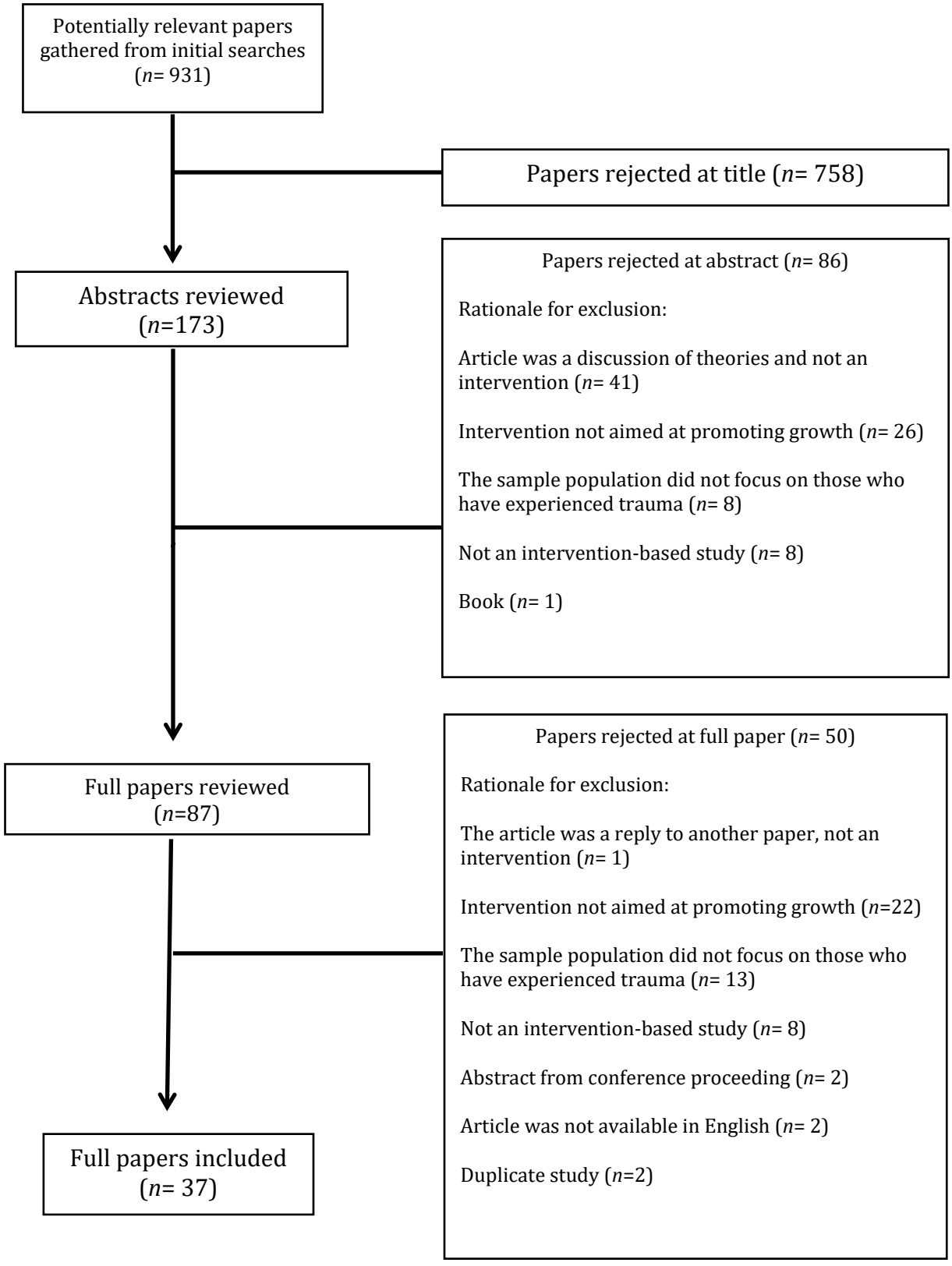

Figure 6. Shifting of Research Papers

Results

Of the 931 papers that were originally identified for potential inclusion in this review, 37 studies met the eligibility criteria. Table 1 summarizes the following characteristics for each study: sample size, gender, mean age, type of trauma, type of intervention, study design, measures, duration of intervention, and number of sessions. Within the 37 studies, 26 different types of interventions were used: 15 studies employed strategies aimed at *Emotional Processing* (e.g., providing emotional catharsis), ten used strategies aimed at developing *Cognitive Techniques* (e.g., developing coping skills), and four implemented interventions that combined these approaches (i.e., *Multi-Model Interventions*). A quality assessment of the articles included in this review was conducted (see Appendix A). The following subsections detail the interventions and their role in the promotion of growth.

Emotional Processing Interventions

Of the 37 studies included in this review, 15 used interventions focused on emotional processing of the traumatic event. For the purposes of this study, emotional processing interventions have been classified based on their aim to provide a sense of closure, catharsis, or fulfillment in relation to the traumatic event. This emotional processing typically occurs as the result of a process of self-disclosure, self-expression, or self-acceptance brought about through the application of the intervention. These interventions comprised of expressive writing (*n*= 7) (Danoff-Burg et al., 2006; Kallay & Baban, 2008; Lewis et al., 2005; Lichtenthal & Cruess, 2010; Low et al., 2006; Low et al., 2010; Smyth et al., 2008), art therapy (*n*= 1) (Singer et al., 2012), peer counseling (*n*= 1) (Giese-Davis et al., 2006), poetry therapy (*n*= 1) (Tegner et al., 2009), narrative

exposure therapy (NET) (*n*= 1) (Hajazi et al., 2014), loving-kindness meditation (*n*= 1) (Kearney et al., 2013), group therapy (*n*= 1) (Salo et al., 2008), benefit-finding (*n*=1) (Chiba et al., 2015), and wish-granting (*n*=1) (Chaves et al., 2016). The participants within these studies were cancer/terminally ill patients (*n*= 8), bereaved individuals (*n*= 1), PTSD diagnosed men (*n*=1), lesbians (*n*= 1), civilians diagnosed with PTSD (*n*= 1), military veterans diagnosed with PTSD (*n*= 1), Iraqi refugees (*n*= 1), political prisoners (*n*= 1), and mentally-ill individuals (*n*=1). The studies included randomized controlled trials (*n*= 10) and non-randomized designs (*n*= 5), and lasted on average of 11 weeks (*SD*= 14.8 weeks) in duration. Non-randomized designs included: single-subject designs (Kallay & Baban, 2008; Kearney et al., 2013), matched subject groups (Giese-Davis et al., 2006), self-selection (Salo et al., 2008), all of which had no control group, and one study (Singer et al., 2012) which used a non-randomized design with a control group comprised of individuals who lived too far away to be tested.

Of the 15 interventions focused on emotional processing, ten (Chiba et al., 2015; Chaves et al., 2016; Lewis et al., 2005; Low et al., 2006; Giese-Davis et al., 2006; Smyth et al., 2008; Lichtenthal et al., 2010; Kearney et al., 2013; Hijazi et al., 2014; Lo et al., 2014) were found to successfully promote growth. For these ten studies, the average length of time since the traumatic event was 59.5 weeks (*SD*= 64.7 weeks), with the duration of the intervention averaging 8.75 weeks (SD= 2.5 weeks) in length, and a frequency of 8.25 sessions (*SD*= 3.5 sessions). Nine of the ten studies included a follow up measure, (no follow up measure reported for Chiba et al., 2015), ranging from 2-6 months post-intervention. The most prevalent intervention was that of expressive writing, with seven studies utilizing this form of treatment, and five demonstrating a significant

Table 1

Quality Assessment for Quantitative Studies

Quality Assessment Item	1	2	3	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1. Sufficient introduction/background provided to explain rationale of study	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2. Hypothesis/aim/ objective is clearly described	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3. Random selection was used	0	0	1	1	0	0	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1
4. Random assignment was used	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1
5. Participants were representative of the entire population from which they were recruited	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6. Outcome variables described	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7. Participant eligibility criteria included	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1

8. Participants demographic information included	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1
9. Groups equal at baseline	1	1	0	1	0	1	0	0	1	1	1	0	1	0	0	1	0	0	0	0	1	1	1	0
10. Interventions adequately described	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
11. Dates of the study reported	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12. Consistent time period between intervention and outcome for control/intervention groups	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	1	1
13. Adherence to study protocol	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14. Sample sizes were adequate (At least 25 per group)	1	1	1	1	0	1	1	0		0	1	1	0	0	1	1	1	1	1	1	0	1	1	1
15. Sample sizes were adequate for subgroup analyses	1	1	1	1	0	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	0	0	1	1
16. Alternate/ distractor task employed for control/comparison group	1	0	1	0	1	0	1	1	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1
17. At least 65% of selected sample completed the study	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18. Description of retention for follow-up or explanation provided for participants lost before follow-up	1	1	0	0	0	1	1	0	1	1	1	1	0	1	0	1	1	0	0	1	1	0	0	0
19. Intention-to-treat analysis followed	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

20. Appropriate statistical tests were used	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21. Main results were clearly described	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22. Main outcomes were measured correctly	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23. Means, SD/SE, CA effect sizes reported	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24. Actual probability values were reported	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25. Study limitations described	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26. Conclusions provided	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total score	23	23	21	23	17	23	23	21	24	21	24	22	20	21	21	22	21	18	19	21	21	21	22	24	

Study reference numbers are as follows:
1 = Low, Stanton, Bower, & Gyllenhammer (2010); 2 = Diab, Peltonen, Qouta, Palosaari, & Punamaki (2014); 3 = LIchenthal & Cruess (2010); 4 = Knaevelsrud, Liedl, & Maercker (2010); 5 = Smyth, Hockemeyer, & Tulloch (2008); 6 = Punamaki, Peltonen, Diab, & Qouta (2014); 7 = Lewis, Derlega, Clarke, Kuang, Jacobs, & McElligott (2005); 8 = Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg (2006); 9 = Hijazi, Lumley, Ziadni, Haddad, Rapport, & Arnetz (2014); 10 = Antoni, Lehman, Kilbourn, Boyers, Culver, Alferi, Yount, McGregor, Arena, Harris, Price, & Carver (2001); 11 = Low, Stanton, & Danoff-Burg (2006); 12 = Penedo, Molton, Dahn, Shen, Kinsinger, Traeger, Siegel, Schneirderman, & Antoni (2006); 13 = Zoellner, Rabe, Karl, & Maercker (2010); 14 = Salo, Punamaki, Qouta, & Sarraji (2008); 15 = Scherwitz, McHenry, & Herrero (2005); 16 = Giese-Davis, Bliss-Ishberg, Carson, Star, Donaghy, Cordova, Stevens, Wittenberg, Batten, & Spiegel (2006); 17 = Kearney, Malte, McManus, Martinez, Felleman, & Simpson (2013); 18 = Kallay & Bahan (2008); 19 = Hagenaars & van Minnen (2010) 20 = Singer, Gotze, Buttstadt, Ziegler, Richter, Brown, Niederwieser, Dorst, Jaklel, & Geue (2012); 21 = Bennett, Lundberg, Zabriskie, & Eggett (2014); 22 = Cameron, Booth, Schlatter, Ziginskas, & Harmann (2007);23 = Lo, Hales, Jung, Chiu, Panday, Rydall, Nissim, Malfitano, Petricone-Westwood, Zimmermann & Rodin (2014); 24 = Tegner, Fox, Phlipp, & Thorne (2009); 25 = McGregor, Antoni, Boyers, Alferi, Blomberg, & Carver (2004); 26 = Chiba, Miyamoto, & Harada (2015); 27 = Chaves, Vazquez, & Hervas (2016); 28 = Carlson, Tamagawa, Stephens, Drysdale, Zhong, & Speca (2016).

Table 2

Emotional Processing Interventions Table

Author and year	Intervention	Number of participants	Population (Participants characteristics)	Intervention Duration	Intervention Frequency	Time since Trauma	Follow-up	Measures used	Design	Outcomes-Promotion of PTG
Singer, Gotze, Buttstadt, Ziegler, et al. (2012)	Art therapy	N= 165	Hematological malignancy patients	22 weeks	22 sessions	<5 years	No	SRGS, German Questionnaire for Social Support	Non-randomized with control	No
Kearney, Malte, McManus, Martinez, Felleman, and Simpson (2013)	Meditation (Loving-Kindness)	N= 42	Veterans with PTSD	12 weeks	12 sessions	Not Reported	3 months	Life Event Checklist, PTSD Symptom Scale Interview, PROMIS, Compassionated Love Scale, Five Facet Mindfulness Questionnaire	Single subject	Yes
Kallay and Baban (2008)	Expressive writing	N= 82	Cancer patients	4 days	4 sessions	4-16 months	4 weeks	BDI, POMS, LRI, SRGS	Single subject	No
Tegner, Fox, Philipp, and Thorne (2009)	Poetry therapy	N= 12	Cancer patients	6 weeks	6 sessions	Not reported	No	HADS, Mini-Mac, CECS, PTGI	Crossover; randomized, with control	No
Low, Stanton, Bower, and Gyllenhammer (2010)	Expressive writing	N= 62	Breast cancer	3 weeks	4 sessions	7.9 years	3 months	CES-D, IES, PSQI	Randomized with control	No
Lichtenthal and Cruess (2010)	Expressive writing	N= 68	Bereaved individuals	1 week	3 sessions	3.9 years	3 months	ICG-R-SF, CES-D, PCL-C, PHI	Randomized with control	Yes

Low, Stanton, and Danoff-Burg (2006)	Expressive writing	N= 60	Breast cancer	3 weeks	4 sessions	<5 months	3 months	Heart rate (during writing sessions), LIWC, POMS	Randomized with control	Yes
Smyth, Hockemeyer, and Tulloch (2008)	Expressive writing	N= 25 Intervention= 15 Control= 10	PTSD	1 day	3 sessions	Not reported	3 months	PSI-I, POMS, PTGI, saliva sample	Randomized with control	Yes
Lewis, Derlega, Clarke, Kuang, Jacobs, and McElligott (2005)	Expressive writing	N= 76	Lesbians	2 weeks	6 sessions	12.32 years	2 months	POMS, PSS, OI, Cohen-Hoberman Inventory of Physical Symptoms, Postwriting Questionnaire	Randomized with control	Yes
Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg (2006)	Expressive writing	N= 75	Lupus or rheumatoid arthritis patients	3 weeks	4 sessions	15 years	1 month; 3 months	MHAQ, CES-D, POMS, visual analog scale, STAI	Randomized with control	No
Hijazi, Lumley, Ziadni, Haddad, Rapport, and Arnetz (2014)	Narrative exposure therapy	N= 63 Intervention= 41 Control= 22	Iraqi refugees	3 weeks	3 sessions	>2.3 years	2 months; 4 months	PTGI, WHO-5, HTQ, BDI, PHQ-15	Randomized with control	Yes
Giese-Davis, Bliss-Isberg, Carson, Star, Donaghy, et al. (2006)	Peer counseling	N= 54	Breast cancer	5 months	50 sessions	2.23 months	6 months	CES-D, PLC-C, FACT-B, CBI, CARES, BCRQ, CECS, WAI, SESES-C		Yes
Salo, Punamaki, Quota, & El Sarraj (2008)	Group therapy	N= 20	Political prisoners	12 months	52 sessions	15 years	No	Harvard Trauma Questionnaire, somatic symptoms survey, PTGI, traumatic experiences, self and other representations, and the contents of	Non-randomized	No

								representations		
Chiba, Miyamoto, & Harada (2015)	Benefit-finding	N= 31	Mentally-ill	8 weeks	8 sessions	Currently in treatment	No	SISR-A, Kessler 6	Randomized with control	Yes
Chaves, Vazquez, & Hervas (2016)	Wish-granting	N=153	Physical illness	1 day	1 session	Currently in treatment	3 weeks	PNES, SLSS, BMSLSSPedsQoL, BFSC, BBWS, YLOT, VIA-Y, HPedsQoL, CESD-7, Medical status	Randomized with control	Yes

Table 3

Cognitive Interventions Table

Authors and year of publication	Intervention	Population (trauma type)	Number of participants	Duration of Intervention	Intervention Frequency	Time since Trauma	Follow-up	Measures	Design	Successful in promoting growth
McGregor, Antoni, Boyers, Alferi, Blomberg, & Carver (2004)	Cognitive-behavioural stress management	Breast cancer patients	N= 29 Intervention= 18 Control= 11	10 weeks	10 sessions	Currently in treatment	3 months	Immune measures, perceived benefits, distress	Randomized with control	Yes
Antoni, Lehman, Kilbourn, Boyers, Culver, Alferi, Yount, McGregor, Arena, Harris, Price, & Carver (2001)	Cognitive-behavioural stress management	Breast cancer patients	N= 100 Intervention= 47 Control= 53	10 weeks	10 sessions	<8 weeks	3 months; 9 months	POMS, CES-D, IES, LOT-R, benefit finding scale, emotional processing scale	Randomized with control	No

Knaevelsrud, Liedl, & Maercker (2010)	Cognitive behavioural therapy	PTSD patients	N= 96 Intervention= 49 Control= 47	5 weeks	3 sessions	2-696 months	3 months	IES-R, BSI, PTGI, LOT-R, NEO-PI-R	Randomized with control	Yes
Zoellner, Rabe, Karl & Maercker (2011)	Cognitive-behavioural therapy	Motor vehicle accident survivors	N= 40 Intervention= 20 Control= 20	8-12 weeks	8-12 sessions	6.2 years	3 months	ISS, trauma severity survey, CAPS, PTGI, LOT-R, NEO-PI-R	Randomized with control	No
Hagenaars, & van Minnen (2010)	Exposure therapy	PTSD patients	N= 80	8-12 weeks	8-12 sessions	11 years	No	Structured Clinical Interview for DSM-IV, PSS-SR, PTGI	Single subject	Yes
Diab, Peltonen, Quota, Palosaari, and Punamaki (2015)	Teaching Recovery Techniques	War-affected children	N= 482 Intervention= 242 Control- 240	4 months	16 sessions	3.5 months	6 months	MHC-SF, SDQ, Willingness to Serve as a Secure Based for the Child, and Family Ambiance Scale	Randomized with control	No
Punamaki, Peltonen, Diab, Quota (2014),	Teaching Recovery Techniques	War-affected children	N= 482 Intervention= 242 Control= 240	6 weeks	8 sessions	3 months	9 months	ERQ, war trauma survey, CRIES, Depression Self-Rating Scale for Children, SDQ, MHC-SF	Randomized, with control	No
Lo, Hales, Jung, Chiu, Panday, Rydall, et al. (2014)	CALM-individual psycho-therapy	Cancer patients	N= 50	6 months	3-8 sessions	3 years	3 months; 6 months	PHQ-9, FACIT-Sp-12, DADDS,	Single subject	No

								ECR-M16, PTGI		
Penedo, Molton, Dahn, Shen, Kinsinger, Traeger, Siegel et al. (2006), (USA)	Cognitive Behavioural Stress Management	Prostate cancer	N= 191	10 weeks	10 sessions	15.2 years	2 months	Measure of Current Status, FACT-G, PCS	Randomized with control	Yes
Carlson, Tamagawa, Stephen Drysdale, Zhong, & Speca (2016)	Mindfulness	Breast cancer	N= 113	8 weeks	14 sessions	19 months	6 months, 12 months	POMS, SOSI, FACT-B, MOS-SSS, FACIT-Sp, PTGI-R	Randomized with control	Yes
Carlson, Tamagawa, Stephen Drysdale, Zhong, & Speca (2016)	Supportive expressive therapy (SET)	Breast cancer	N= 73	12 weeks	12 sessions	19 months	6 months, 12 months	POMS, SOSI, FACT-B, MOS-SSS, FACIT-Sp, PTGI-R	Randomized with control	Yes

Table 4

Combined Interventions Table

Author and year and country	Intervention	Number of participants	Population (Participants characteristics)	Intervention Duration	Intervention Frequency	Time since trauma	Follow-up	Measures used	Design	Outcomes- Promotion of PTG
Cameron, Booth, Schlatter, Ziginska, and Harman (2007)	Healing journey	N= 154	Breast cancer	12 weeks	12 sessions	<6 weeks	4 months; 6 months; 12 months	CECS, IPQ-R, BFC-BC, FACT, SSTAI	Non-randomized with control	Yes
Scherwitz, McHenry, and Herrero (2005)	Interactive Guided Imagery^{SM}	N= 323	Medical patients	6 weeks	6 sessions	Not reported	No	Interview Patient Guided Imagery Survey	Single subject	Yes
Bennett, Lundberg, Zabriskie, and Eggett, (2014)	Higher Ground programme	N= 34	Veterans and their significant others	5 days	5 sessions	2.3 years	No	RDAS, PCL-M/C, PTGI	Non-randomized with control	No
Salo, Punamaki, Quota, and El Sarraj (2008)	Individual therapy	N= 19	Political prisoners	12 months	52 sessions	15 years	No	Harvard Trauma Questionnaire, somatic symptoms survey, PTGI, traumatic experiences, self and other representations, and the contents of representations	Non-randomized	Yes

Table 5

Qualitative Studies

Author and year and country	Intervention	Number of participants	Population (trauma type)	Intervention Duration	Intervention Frequency	Time since Trauma	Follow-up	Measures used	Outcomes- Promotion of PTG
Sabiston, McDonough, and Crocker (2007)	Dragon boat racing	N= 20	Breast cancer survivors	(2 years on team), 1 interview	1 interview	3.8 years	No	Semi-structured interviews	Yes
McDonough, Sabiston, and Ullrich-French (2011)	Dragon boat racing	N= 17	Breast cancer survivors	10 months	4 interviews	4.06 years	1 year	Semi-structured interviews	Yes
Burke and Sabiston (2010),	Mount Kilimanjaro climb	N= 6	Breast cancer survivors	9 Days	5 Interviews	6 months-18 years	No	Semi- structured interviews	Yes
Dunphy, Elton, and Jordan (2014),	Dance and movement therapy	Not reported	Conflict survivors	3 days	3 sessions	Not reported	No	Semi-structured interviews	Yes
Morris, Campbell, Dwyer, Dunn, and Chambers (2011)	Amazon Heart Thunder event	N= 27	Breast cancer survivors	10 days	1 interview	6.39 years	3 weeks	Semi-structured interviews	Yes
Mohr (2014)	Art therapy (photography)	N= 11	Children survivors of natural disaster	4 months	2 interviews; 1 group, 1 individual	3 years	No	Non-structured group interviews	Yes
Heffernon, Grealy, and Mutrie (2008)	Group exercise class	N= 10	Breast cancer survivors	(1 year follow up study)	1 interview	Not reported	Yes	Semi-structured interviews	Yes

Table 6

Measures of Growth used in Interventions Studies: Abbreviations and Full Titles

Abbreviation (as used in article):	**Full Name of Measure:**
BBWS	*Beliefs in the Benevolence of the World Scale*
BCRQ	*The Breast Cancer Resources Questionnaire*
BDI	*Beck Depression Inventory*
BDI-II-	*Beck Depression Inventory II*
BFC-BC	*Benefit-Finding Scale for Breast Cancer*
BFSC	*Benefit Finding Scale for Children*
BMSLSS	*Brief Multidimensional Students' Life Satisfaction Scale*
BSI	*Brief Symptom Inventory*
BSI-18	*Brief Symptom Inventory-18*
CAPS-	*Clinician-Administered PTSD Scale*
CARES	*Cancer Rehabilitation Evaluation System*
CBI	*The Brief Cancer Behavior Inventory*
CECS	*Courtauld Emotional Control Scale*
CES-D	*Center for Epidemiologic Studies-Depression Scale*
CRIES	*Children's Impact Event Scale*
DADDS	*Death and Dying Distress Scale*

ECR-M16	*Modified Experiences in Close Relationships*
ERQ	*Emotional Regulation Questionnaire for Children*
FACIT-Sp-12	*Functional Assessment of Chronic Illness Therapy- Spiritual Well-Being Scale*
FACT	*Functional Assessment for Cancer Therapy*
FACT-B	*The Functional Analysis of Cancer Therapy*
HADS	*Hospital Anxiety and Depression Scale*
HPedsQoL	*Health-Related Quality of Life Scale*
ICG-R-SF	*Inventory of Complicated Grief- Revised-Short Form*
IES	*Impact of Events Scale*
IPQ-R	*Illness Perceptions Questionnaire-Revised*
ISS	*Injury Severity Score*
K6	*Kessler 6*
LIWC	*Linguistics Inquiry and Word Count Program*
LOT-R	*Life-Orientation Test-Revised*
LRI	*Life Regard Index*
MHAQ	*Modified Health Assessment Questionnaire*
MHC-SF	*Mental Health Continuum-Short Form*
Mini-MAC	*Mini-Mental Adjustment to Cancer Scale*
MOS-SSS	*Medical Outcomes Study Social Support Survey*
NEO-PI-R	*Openness to Experience Scale of the NEO Personality Inventory Revised*

OI	*The Outness Inventory*
PCL	*PTSD Checklist Civilian*
PCL-C	*Posttraumatic Stress Disorder Checklist-Civilian Version*
PCL-M/C	*PTSD Checklist, Military/Civilian Version*
PedsQoL	*Pediatric Quality of Life Scale*
PHI	*Physical Health Index*
PHQ-15	*Patient Health Questionnaire*
PHQ-9	*Patient Health Questionnaire-9*
PNES	*Positive and Negative Emotional Style Scale*
POMS	*Profile of Mood States*
PROMIS	*Patient-Reported Outcomes Measurement Information System*
PSQI	*Pittsburgh Sleep Quality Index*
PSS	*Perceived Stress Scale*
PSS	*PTSD Symptom Scale*
PSS-I	*PTSD Symptom Scale Interview*
PSS-SR	*Posttraumatic Stress Symptom Scale, Self-Report*
PTGI	*Post-Traumatic Growth Inventory*
RDAS	*Revised Dyadic Adjustment Scale*
SDQ	*The Strengths and Difficulties Scale*
SESES-C	*The Stanford Emotional Self-Efficacy Scale-Cancer*

SF-12	*Health Survey Short Form- 12 version 2*
SISR-A	*Self-Identified Stage of Recovery- Part A*
SLSS	*Student Life Satisfaction Scale*
SOSI	*Symptoms of Stress Inventory*
SRG	*Stress-Related Growth Scale*
SSTAI	*Spielberger State-Trait Anxiety Inventory*
STAI Form Y-2	*State-Trait Anxiety Inventory*
TRGI	*Trauma-Related Guilt Inventory*
VIA-Y	*Values in Action Inventory of Character Strengths for Youth*
WAI	*The Weinberger Adjustment Inventory*
WHO-5	*World Health Organization Well-Being Index-Arabic translation*
YLOT	*Youth Life Orientation Test*

effect. Although not all researchers offered explanations as to how expressive writing related to the development of growth, this specific intervention is generally considered to promote growth by guiding the individual towards a sense of meaning-making. Similarly, meditation was found to enable participants to adopt a more approach-oriented attitude towards future adversity and accept their prior traumatic experience. These adjustments ultimately lead participants to develop a greater sense of self-compassion. Likewise, narrative exposure therapy (NET) was found to help participants confront their painful memories, which then enhanced self-efficacy, particularly regarding confronting future adversity. This shift in approach from fearful avoidance to courageous confrontation can support cognitive processing of the trauma and encourage the development of new meaning. Moreover, engaging in a narrative with others was found to foster growth through a sense of validation from others and connectedness to a group; this process was found to also occur in group therapy. A similar response was observed in the benefit-finding intervention, in which the participants listened to the stories of others and were in this way incited to reflect on their own experiences. Across these narration-based interventions, the act of narrating was considered particularly beneficial when they shared their experiences with others who had been through a similar experience, providing a sense of being validated and understood.

Collectively, these studies showed that interventions focused on emotional processing helped participants make sense of their experiences by learning to accept their circumstances and express their emotions to themselves and to others. In so doing, participants indirectly developed enhanced coping skills which better prepared them for future adversity, as well as increased social networks which likewise provided a sense of

social support from others who, although previously unknown to the participants, shared similar stories and could be mobilized for support when necessary. The five interventions that did not result in growth-related experiences comprised art therapy involving hematological malignancy patients (Singer et al., 2012), poetry therapy for cancer patients (Tegner et al., 2009), and expressive writing for breast cancer patients and lupus/rheumatoid arthritis patients (Danoff-Burg et al., 2006; Kallay et al., 2008; Low et al., 2010). Several explanations were provided as to why these interventions did not promote growth Firstly, the sample size in each intervention (N=74, Danoff-Burg et al., 2006; N= 45, Kallay et al., 2008; N= 12, Tegner et al., 2009; N= 76, Low et al., 2010) was deemed too small to detect significant effects. Second, it was suggested by the researchers of the expressive writing study with lupus/rheumatoid arthritis patients (Danoff-Burg et al., 2006), that the intervention did not match the participants' needs, as it required participants who may typically utilize an avoidant style of coping to confront and disclose their thoughts and feelings, but without arming these individuals with the appropriate tools to comfortably do so. In regard to Low et al's. (2010) expressive writing intervention, the timing of the intervention was speculated to be too late in relation to the cancer diagnosis (e.g., an average of 7.9 years since receiving a cancer diagnosis) and the researchers believed that most participants had already begun to process and express their emotions related to their cancer experience prior to beginning participation in the intervention. The researchers (Tegner, Fox, Philipp, & Thorne, 2009) of the poetry intervention also considered the timing of the therapy to be inappropriate relative to the cancer treatment, as participants were concurrently undergoing medical treatment for their cancer. This was considered poor timing because the participants were not yet able

to thoroughly process their cancer experience, and could potentially need follow-up assessments of their cancer treatment outcomes. Thus, these researchers recommended that future research focus on participants who have completed cancer treatment. Lastly, the art therapy was suggested to lack the necessary tools (i.e., narrative re-construction) or resources (i.e., social support) needed to address the participants' stress. Taken together, these five studies reinforce the importance of the timing and nature of the intervention both in relation to the traumatic experience and the needs of the individual when designing a therapy aimed at promoting growth.

Cognitive Techniques Interventions

Within the current review, ten studies employed interventions aimed at promoting growth using cognitive strategies. Cognitive strategies provide individuals with tools (i.e., coping skills) that may be applied to past traumatic experiences as well as future potential stressors (Yeung, Lu, Wong, & Huynh, 2016). The cognitive-based interventions comprised cognitive-behavioural stress management (CBSM) (*n*= 3) (Antoni et al., 2001; McGregor et al., 2004; Penedo et al., 2006), Teaching Recovery Techniques (TRT) (*n*= 2) (Diab et al., 2015; Punamaki et al., 2014), cognitive-behavioural therapy (CBT) (*n*= 2) (Knaevelrud et al., 2010; Zoellner et al, 2011), exposure therapy (n=1) (Hagenaars & van Minnen, 2010), managing cancer and living meaningfully (CALM) (*n*= 1) (Lo et al., 2014), mindfulness (*n*=1) (Carlson, et al., 2016), and supportive expressive therapy (SET) (*n*=1) (Carlson et al., 2016). The participants within these studies included cancer patients (n=4), war-affected children (*n*= 2), and motor accident vehicle survivors (n= 1). The studies included both randomized controlled trials (n= 4) and quasi-experimental designs (n= 9) and lasted an average duration of 8 weeks (*SD*= 2.3 weeks).

Six of these eleven interventions (Hagenaars & van Minnen, 2010; Knaevelsrud et al., 2010; McGregor et al., 2004; Penedo et al., 2006; & Carlson et al., 2016) were found to promote growth. These interventions were: cognitive-behavioural stress management (CBSM; McGregor et al., 2004; Penedo et al., 2006), cognitive behavioural therapy (CBT; Knaevelsrud et al., 2010), exposure therapy (Hagenaars and van Minnen, 2010), mindfulness (Carlson et al., 2016), and supportive expressive therapy (Carlson et al., 2016). Skills taught across all six of these studies were approach coping and disclosure. Other frequently used coping skills included relaxation training, cognitive restructuring strategies, and interpersonal reflection. The interventions that produced growth took place an average of 33.5 weeks (*SD*= 75.5 weeks) after the traumatic event, lasted 12 weeks (*SD*= 18.1 weeks) in length, with an average of 11 sessions (*SD*= 16.8). Four of these five studies conducted follow-up assessments 2-3 months post-intervention. Within the six successful cognitive technique-based interventions, the researchers either identified (McGregor et al., 2004; Knaevelsrud et al., 2010; Penedo et al., 2006) or suggested (Hagenaars et al., 2010; Carlson et al., 2016) that growth was achieved through the aid of cognitive restructuring. Collectively, the interventions enabled participants to reframe their experience in a positive manner, particularly about finding benefits related to the traumatic event. The process of cognitive restructuring was fostered through journaling, disclosing during group sessions, and providing role models for positive social comparison. Additionally, these cognitive technique-based interventions aided participants in engaging in reflective practices. Reflection was encouraged through either group or individual relaxation sessions, which participants were also encouraged to practice these techniques at home. Reflection was further nurtured by the use of writing.

Specifically, participants were urged to reflect on any positive outcomes that occurred because of their negative experience. By beginning a practice of reflection participants could relieve their distressing symptoms and find meaning within their experiences, similar to the mechanisms observed in the other groups of interventions. Moreover, decreasing distressing symptoms were also suggested to increase a sense of mastery and creating new possibilities. Likewise, enhancing approach-oriented coping skills and assertiveness were other factors that promoted growth, as many participants were identified as avoiding their traumatic experiences. Theses coping shifts were supported through discussions and disclosure during group sessions.

Of the interventions employed within these studies, three were found not to have the desired effect of promoting growth; two Teaching Recovery Technique (TRT) programmes with war-affected children (Punamaki et al., 2014; Diab et al., 2015) and the cognitive-behavioural therapy (CBT) with motor vehicle accident survivors (Zoellner et al., 2010). The authors of the Gaza War (Punamaki et al, 2014; Diab et al, 2015) studies concluded that the timing of the TRT intervention was inappropriate given the recent conclusion of the war three months prior and speculate that the children were not yet mentally or emotionally ready to begin confronting their experiences. The researchers also suggested that the intervention, which focused on connecting children to their peers through group participation in resilience-building exercises, might have been more successful if instead the focus was on providing older caregiving figures who could offer a sense of protection to the young children. Thus, the researchers postulate that the resources (e.g., peers, coping strategies) delivered did not meet the needs of the individuals involved, as these war-affected children may have benefited most from a

sense of protection and security. Additionally, the authors (Diab et al., 2015) of the CBT intervention for war-affected children speculated that although the therapy aided the reduction of PTSD symptoms, the intervention duration (estimated *n*=4 months; one school semester) and session frequency (*n*= 16) were too low to reveal any effects. Similarly, the authors (Zoellner et al, 2011) of the motor vehicle accident CBT intervention stated their belief that the sample (*n*= 40) was too small to reveal any significant effects. Altogether, these three studies further support the importance of encouraging traumatized individuals to reframe their experience through the use of cognitive restructuring, which may be aided through the promotion of coping skills focused on nurturing an approach orientation and disclosure.

Combined Techniques Interventions

Four of the studies included in this review used combined interventions that employed emotional processing and cognitive strategies. These interventions comprised Interactive Guided Imagery (*n*= 1) (Scherwitz et al., 2005), individual therapy sessions (*n*= 1) (Salo et al., 2008), Higher Ground programme (*n*= 1) (Bennett et al., 2014), and an adaptation of the Healing Journey programme (*n*= 1) (Cameron et al., 2007). Study participants were medical patients (*n*= 2), political prisoners (*n*= 1), and veterans (along with their significant others) (*n*= 1). All four studies employed a quasi-experimental design that involved interventions that lasted an average duration of 18 weeks (*SD*= 23.27). Three of the interventions were found to promote the development of growth. These three interventions were: the Healing Journey (Cameron et al., 2007), Interactive Guided Imagery (Scherwitz et al., 2005), and individual therapy (Salo et al., 2008). The skills taught across these three studies enabled participants to reshape their cognitions

related to their traumatic experience through the assistance of emotional regulation, cognitive restructuring, and meaning-making exercises. The interventions that lead to the development of growth took place 72.8 weeks (*SD*= 123.9 weeks) after the traumatic event and lasted an average of 24 weeks (*SD*= 24.3 weeks) with 23.3 sessions (*SD*= 25.0 sessions).

The three studies that promoted growth shared commonalities. For instance, relaxation techniques featured prominently in all three studies, suggesting that relaxation skills may be efficacious for fostering growth. Indeed, the researchers theorized that through the use of relaxation strategies participants are more fully able to uncover their emotions and better establish a sense of control and wellbeing. Coupled with relaxation, was the presence of a practitioner or therapist, which allowed for emotional disclosure alongside acquiring a new coping technique. Indeed, for two studies (Scherwitz et al., 2005; Salo et al., 2008) the role of the practitioner was prominent, signifying the importance of the relationship between participant and therapist, particularly in relation to trust, as participants were able to more deeply explore their experience and emotions when guided by a trusted practitioner. Furthermore, the authors suggested that a more traditional therapeutic setting (i.e., one on one therapy sessions conducted in an office setting) may have instilled participants with a sense of "doing therapy". This may have been integral to the therapeutic process, as participants perceived the act of engaging in the intervention to signify that they were taking measures to make personal improvements, which in turn increased their perception of wellbeing. Perhaps most importantly, however, was the potential for one-on-one time with therapists to provide for sessions that had been tailored to the individual's unique needs by using a combination of

techniques aimed at both symptom reduction and promoting growth, such as emotion regulation, desensitization, and training of effective coping strategies. These techniques were selected to address the traumatic experiences of the individual, but tailored to meet their current requirements. Conversely, one study (Cameron et al., 2007) specifically sought to minimize therapist effects and instead conducted group classes that were overseen by different facilitators. These classes involved a mixture of relaxation, imagery, goal setting, and emotional disclosure through expressive writing. The aims of these classes were to provide any necessary emotional release for the participants while also helping to build appropriate coping skills. Overall, these combined interventions aided the occurrence of growth by allowing emotional processing to take place while also teaching coping skills that fostered the individual's ability to reframe the traumatic event.

Of the combined interventions, one did not demonstrate the development of growth. The Higher Ground programme, while showing promising results in the reduction of PTSD and an increase in marital satisfaction, did not support the occurrence of growth. Although it was not clear why this programme did not result in growth, the researchers postulated that it might have been due to the duration of the intervention not being long enough, as the programme lasted only a week. Although results showed a decrease in PTSD symptoms, the researchers believed growth was not observed as that there was insufficient time for the participants to adequately engage in reflection or introspection, which may have ultimately lead to the development of growth.

Qualitative Interventions

Of the 37 intervention studies eight were qualitative. Of these, six utilized sport/exercise-based interventions, with the remaining study employing a performing art

therapy. The sports/exercise programmes were dragon boat racing (n=2) (McDonough et al., 2011; & Sabiston et al., 2007), dance/movement therapy (n=1) (Dunphy et al., 2014), photography programme, (n=1) (Mohr, 2014), boxercise (n=1) (Hefferon et al., 2013), mountain climbing (n=1) (Burke & Sabiston, 2010), group exercise class (n=1) (Hefferon et al., 2008), and participation in the Amazon Heart Thunder event (n=1) (Morris et al., 2011). The participants within these studies were breast cancer survivors (*n*= 5), individuals with mental health difficulties (*n*=1), children survivors of a natural disaster (*n*=1), and citizens from an area of conflict (n=1). On average, these interventions took place 44.9 weeks (*SD*= 32.0) after the traumatic event, and lasted an average of 18.3 weeks (*SD*= 23.4 weeks); unfortunately, the reports of these studies do not provide sufficient information to determine the average frequency of these interventions. Only two studies conducted a follow up assessment, one occurring at 3 weeks' post-intervention (Morris et al., 2011), and one taking place one year (McDonough et al., 2011) after the initial data collection.

In total, the interventions used within these studies were found to be effective and beneficial for the individuals taking part and all reported the participants experienced growth. Common themes identified by the researchers of these studies include: a sense of empowerment, shifting of identify, role of social support and community, increased disclosure, heightened appreciation for life, and self-nurturing. The group aspect of these interventions highlighted the importance of social support in the development of growth. Specifically, the support given by those who had experienced a similar hardship was found to be efficacious for promoting disclosure. Likewise, it was found to be advantageous to growth when participants were able to provide help to others, as this

highlighted how far they themselves had personally come during their own challenging times. These interventions encouraged participants to share their experiences by creating a supportive atmosphere; this sense of shared experiences helped to normalize the stressful event. In particular, an alternative setting to the traditional discussion-based group therapy, for example, while climbing a mountain, was effective in encouraging disclosure and building relationships.

Also beneficial in the promotion of growth was the use of physical movement and exercise therapies. Overcoming a physical challenge was found to be valuable in shifting the participants' identity to that of a proactive survivor by establishing a drive to continue to engage in new health behaviours and self-nurturing activities. Participants demonstrated increased personal strength and sense of personal control, and inner fulfillment. The participants found the therapies to be positive experiences that fostered a shift in identity to that of a capable and proactive survivor. The participants in these exercise-based programmes reported that overcoming a physical challenge also provided a feeling of closure on their traumatic experience. These studies, however, are not without limitations. The most common limitation reported among the authors of these studies is that the studies used self-selected participants (Sabiston et al, 2007; Dunphy et al, 2014; Mohr, 2014), which they speculated could have provided a skewed idea of the effectiveness of these interventions, as these individuals may have been more receptive to the therapies. For many studies time limitation was an issue, in that they were only able to collect data at a specific time point, typically immediately upon the completion of the intervention and so the lasting effects of the interventions may not yet be fully understood.

Discussion

The purpose of this study was to systematically review evidence-based intervention research aimed at promoting growth for populations who had experienced a traumatic event. This was done to identify potential interventions that practitioners working with injured athletes might use to foster growth. In total, 37 studies fit the eligibility criteria for the review. Based on the analysis of these 37 studies, the current systematic review provides preliminary support for the efficacy of a number of intervention strategies for promoting growth, specifically: cognitive-behavioural stress management, cognitive behavioural therapy, exposure therapy, the Healing Journey programme, loving-kindness mediation, written disclosure/expressive writing, group therapy, individual therapy, peer counseling, interactive guided imagery, benefit-finding, wish-granting, mindfulness, supportive-expressive therapy, group exercise classes, photography, Amazon Heart Thunder, dragon boat racing, and climbing Mt Kilimanjaro. Results suggest that growth is promoted through the mechanisms of cognitive restructuring and reappraisal, and researchers should be aware of the nature and timing of the intervention and ensure that these considerations correspond with the needs of the individual. These mechanisms, considerations of these interventions, limitations, and recommendations for future research will now be discussed.

Upon review of the successful interventions across the four intervention groups, two common coping skills emerged: approach-oriented coping and disclosure. Firstly, the interventions that promoted growth encouraged participants to adopt an approach-oriented coping skills attitude. This shift from avoidant to approach coping also elevated participants' sense of mastery, assertiveness, control, and self-efficacy. It may be that by

instilling individuals with an orientation focused on approaching their traumatic experiences, they feel better prepared to face future adversity. Another common element to emerge from the successful studies was the development of disclosure as a coping skill. By disclosing thoughts and feelings to others, individuals were better able to make meaning from their experience, deepen social bonds, shift their thoughts surrounding the traumatic event, and experience a sense of closure. These two coping skills may be critical for injured athletes, as after sustaining injury athletes will need to be aware of their needs and take an active stance in their recovery in order to develop growth. Disclosing to others may assist athletes to process their emotions and perceive they have the support they need to begin the growth process.

For many of the studies that promoted growth, the researchers either identified or suggested that the intervention achieved success by addressing and restructuring the participants' cognitions. Numerous studies (e.g., Fisher & Wells, 2009; Simons, 2010; Wells & Colbear, 2012; Delahaij & van Dam, 2016) have shown that encouraging individuals to engage in a metacognitive practice enables a sense of control, a more solution-focused coping style, and a reduction of negative symptoms (e.g., anxiety). This links with the results of Study 1 and this review, both of which found that participants were able to develop growth by becoming aware of their thoughts and redirecting negative thoughts. In Study 1, participants became aware of their metacognitions either through internal resources, such as personality (e.g., always looking for positives) or were influenced by external resources, such as family and friends (e.g., urging positive thinking). In the current review, results indicate that a variety of interventions were able to make participants aware of their metacognitions, such as therapies that influenced

individuals to reflect and/or refocus their thinking patterns into more positive directions. The interventions (Mt Kilimanjaro climb, Burke & Sabiston, 2010; Boxercise class, Hefferon et al., 2013; narrative exposure therapy, Hijazi et al., 2014; loving kindness meditation, Kearney et al., 2013; cognitive behavioural therapy, Knaevelsrud et al., 2010; written disclosure, Lichtenthal & Cruess, 2010; Low et al., 2006; cognitive behavioural stress management, McGregor et al., 2004; Amazon Heart Thunder, Morris et al., 2011; cognitive behavioural stress management, Penedo et al., 2006; individual therapy, Salo et al., 2008; and Interactive Guided Imagery, Scherwitz et al., 2005) made participants aware of their emotions, which in turn enabled them to make meaning from their experiences. These findings relate to Study 1 in that the injured athletes used meta-cognitions to raise their awareness of what they were thinking and feeling, which in turn enabled them to re-appraise their injury experience. Therefore, it could be suggested these interventions may be efficacious to use with injured athletes. Positive reappraisal was another mechanism of growth that was either identified or suggested by the researchers of these interventions. Positive reappraisal is the tendency to reframe seemingly negative events as beneficial and/or meaningful (Lazarus & Folkman, 1984) and is strongly associated with positive outcomes after a challenging experience (Hanley, Garland, & Tedeschi, 2016). Studies have shown that after experiencing a traumatic event, individuals who engage in positive reappraisal practices, in addition to perceiving meaning associated with their challenge, also have an enhanced sense of priorities and purpose in life (Sears, Stanton, & Danoff-Burg, 2003). The participants of the studies within this review were prompted to begin a practice of positive reappraisal by being explicitly coached to focus on advantageous aspects and outcomes of their traumatic

experiences. Whether advertently or inadvertently, by directly coaching the participants to begin a practice of positive reappraisal, these interventions may have been encouraging growth by helping to move individuals further along the growth mindset continuum (Dweck, 2006). Resultantly, participants will have therefore been more likely to positively view their situation as being a challenge that can be learned from and lead to a sense of personal achievement. Positive reappraisal was likewise found to be a critical component of the development of growth according to the *Theory of Sport Injury Related Growth*, however, participants of study 1 reported that they began the practice of positive reappraisal as the result of either internal (e.g., coping skills) or external (e.g., social network) encouragement. The results of the current review show that individuals may be successfully directed to begin a practice of positive appraisal through the implementation of various interventions, which then better enables the development of growth.

Although many interventions focused on individual practices, group programmes have also displayed promising results. Introducing a social aspect to the interventions was particularly beneficial for promoting emotional disclosure, as participants were able to socially bond with others through sharing experiences and gaining a sense of validation from others. This group bonding was especially salient in the interventions based on physical activities, such as climbing Mt Kilimanjaro or participating on a dragon boat racing team; however, it should be noted that these types of physical activities may not be achievable for injured athletes, as they may be experiencing limited mobility. This social-physical aspect aligns with the assertions made by other researchers (e.g., Ottesen, Jeppesen, & Krustrup, 2010; Love, & Sabiston, 2010) that physical activity aids social bonding, particularly in smaller groups where communication among members is more

achievable and a greater sense of empathy and closeness is developed (Putnam & Feldstein, 2003). Furthermore, these findings concur with the results of Study 1, once again highlighting the importance of social support during a stressful time, particularly for athletes who more value social relationships. By emphasizing and building upon an athlete's social network, they may be more facilitated in the development of growth, as they feel better supported and understood. By receiving, or perceiving, this support, participants were able to experience positive emotions which put them in good position to "reach out", prompting these individuals to reciprocate and extend these acts of kindness. Additionally, new social support could help equip and influence injured athletes to begin engaging with the mechanisms that lead to growth by demonstrating or encouraging the practices of metacognitions and positive reappraisal. Moreover, these findings may help to extend the theory developed in Study 1, by suggesting the engagement of physical activity to aid social bonding; for example, encouraging a buddy system for injured athletes in which they complete the rehabilitation exercises in unison. However, it should be noted that these interventions lasted over a period of at least a few days, which further facilitated social bonding as participants were able to become more comfortable with one another and the opportunities to bond and disclose increase over time. Unfortunately, follow up assessments for these studies were generally not conducted, so the effects of bonding on the participants' social network are not fully understood.

Collectively, the interventions that promoted growth took place 37.8 months (*SD*= 54.8 months) after the traumatic event, lasted an average of 13.7 weeks (*SD*= 17.1 weeks), and 8.75 sessions (*SD*= 11.0 sessions). It should be noted, however, that a number of these studies focused on individuals who suffered from post-traumatic stress

disorder (PTSD) and so allowing for a longer amount of time to elapse since the traumatic event may have been necessary for participants to feel ready (e.g., less frightened) to be begin addressing their trauma (Maren, Chang, & Thompson, 2006). Likewise, a large proportion of these studies represented participants suffering from a medical illness (e.g., cancer), which may be more appropriately linked to sport injury, as both affect the physical body (e.g., physiology; e.g., Perna, Antoni, Baum, Gordon, & Schneiderman, 2003). From reviewing the literature, there does not seem to be an ideal timeframe to intervene. If an intervention is implemented too early, the individual may not have sufficient time to process the trauma; too late, and they may have already processed the trauma, but in a negative direction (cf. Wadey & Hanton, 2014). Ultimately, and in line with other suggestions, meeting the needs of the individual appears most important. Of the studies concerned with trauma of a medical nature, interventions occurred much closer in time to the traumatic event, which may indicate that implementing an intervention for injured athletes may be more beneficial when applied soon after the injury. This mirrors the process demonstrated in the *Theory of Sport Injury Related Growth* (see Chapter 3), which shows that upon sustaining injury, athletes will experience a range of fluctuating emotions and thoughts. After an initial period of turmoil, athletes who experienced growth were able to regulate and control their thoughts, refocusing in a positive direction. The timing aspect found within this review indicates that applying an intervention during this critical period may more effectively assist injured athletes to begin experiencing the metacognitions that lead to the development of growth. The importance of appropriate timing is also consistent with the functional-descriptive model (Tedeschi & Calhoun, 1995, 2004), which posits that after a

traumatic event people will begin a phase of automatic rumination characterized by uncontrollable, often distressing, thoughts surrounding the traumatic event. Over time, the individual will begin to shift towards deliberate rumination wherein the individual learns to take control over their thoughts and starts to develop a narrative that gives meaning to the event and restores a sense of their worldview. While the individual may still experience distress in relation to the traumatic event, the shift towards deliberate rumination marks the development of post-traumatic growth (Joseph & Linley, 2006). As demonstrated by the results of the present study, an intervention that takes place in closer proximity to the traumatic event may be useful in guiding the individual through the initial phase of automatic rumination and assist with the shift towards deliberate rumination, thereby making the individual aware of their metacognitions and helping them to positively reappraise their experience so that they may begin the process towards developing growth. This relates with the *Theory of Sport Injury Related Growth* and the external factor of free time, as athletes will only have so long before returning to full-time competition, so applying interventions during this period may be critical, as long as this also meets the needs of the athlete.

Similarly, the importance of the intervention matching the individual's needs emerged as an important finding within this review. For example, in Salo et al.'s (2008) study participants self-selected the intervention group they were in, based on their personal preferences (e.g., group sessions vs. individual therapy). This procedure encouraged participation in the invention as it aided the participants to feel more comfortable with their involvement in therapy. Similarly, other studies (e.g., Bennett et al., 2014) chose to break the mold of "traditional therapies" and develop new ways to

reach populations that would otherwise be reluctant to participate in a psychological study. This approach to promoting growth is consistent with the evidenced-based practice in psychology (EBPP), a healthcare movement that focuses on the importance of attending to the individual's preferences, characteristics, and culture to align research aims with an individual's values (Anderson, 2006). Moreover, the matching of individual's needs relates to the concept that athletes may hold different values and so interventions aimed at raising awareness of these values may be more successful for injured athletes. This corroborates with the findings of Mahoney and Hanrahan (2014), who found that helping injured athletes to recognize their values serves to foster behaviours that support these values and consequently may lead to an increase in well-being. These values may also link with the positive emotions of the *Theory of Sport Injury Related Growth*. For example, an injured athlete may value their physicality and have more interest in physical development (e.g., increased strength), and so interventions could aim at directing these individuals towards resources (e.g., strength-specific rehabilitation programme) that will encourage growth related to physiological improvement. Alternatively, injured athletes might value relationships more, and have an interest in building their social network, and so interventions could aim at cultivating social bonds (e.g., using a buddy system to pair individuals).

As with all research, the studies reviewed have limitations, some of which were common across the studies. The primary limitation of the quantitative studies was the relatively small sample sizes, as these studies might not have sufficient statistical power to detect significant effect, and the homogenous nature of the samples; however, smaller samples are not considered a concern for qualitative studies. Unfortunately, this limits the

external validity and statistical generalization of the findings to other sub-groups. This may indicate that the interventions that were successful for these populations may not demonstrate the same success rates when applied to injured athletes. The lack of control groups for several studies also raises concern, as it is not possible to determine whether the observed changes were instigated by the intervention or were natural occurrences. Another limitation is that although the majority of studies utilized randomized assignment, participants in all instances knew the nature of their assigned group and therefore may have been subject to observer effect. Self-selection among participants is another concern, as this could have potentially confounded the effects of the intervention with the participants arguably more susceptible to the intervention effects. Additionally, not all papers reported using manipulation checks and so the validity of the study's results may not have been a result of the intervention, but may in fact be attributed to an external factor. Follow up tests were not reported in a majority of these papers, and so the longer-term effects of the intervention are unknown and social validation assessments were generally not reported, so the participants' satisfaction with the intervention cannot be determined. Lastly, although many researchers analysed the mechanisms associated with the interventions, this is unfortunately not true for all papers included in this review and therefore, in several instances, the mechanisms were interpreted by the current research team. Future research should look to address these limitations to better understand how to successfully promote growth for a variety of traumatized populations.

This review is not without its own limitations, primarily the inclusion of studies that fit the eligibility criteria regardless of the quality of the research. Consequently, research of various quality has been included, potentially diluting the overall results.

Additionally, not all articles that relate to this issue may have been located and identified. While an attempt was made to counter this by including a variety of search terms across a number or databases, there remains the possibility that not all the applicable research was obtained for review.

Overall, this study has been beneficial in identifying several potential interventions that practitioners could use when working with injured athletes. By systematically reviewing the efficacy of growth-promoting interventions, this study helps to enhance understanding from an evidence-based practice perspective. However, a practice-based approach would further assist comprehension of the promotion of growth by providing real-world knowledge. Indeed, while evidence-based practice is generated from rigorous research, practice-based evidence is acquired through practice and personal experience (Barkham & Mellor-Clark, 2003). Hence, while we now have several potential interventions strategies, this study is limited in that it has not identified the phases of development, nor the contextual factors that might affect the implementation of these interventions in an applied setting. One way to collect practice-based evidence is to learn from the experiences of sport psychologists who have worked with injured athletes. This approach to practice-based evidence has been proven to good effect in the sport psychology literature thus far (e.g., Beaumont, Maynard, & Butt, 2015; Fletcher, Rumbold, Tester, & Coombes, 2011; Ludlam, Butt, Bawden, Lindsay, & Maynard, 2016). Establishing a deeper understanding through the generation of practice-based evidence of how growth following sport injury may be encouraged in a practical setting would better equip professionals, such as sport psychologists, to more effectively guide injured individuals towards the development of desirable outcomes (Martens, 1986).

Although this review has helped to identify potentially useful interventions, sport injury related growth is a unique process and further exploration of how it may be fostered is warranted. Future research should aim to explore the promotion of growth in an applied setting from a practice-based approach so as to better support injured athletes.

Chapter 5:

Practice-Based Evidence of Facilitating Sport Injury-Related Growth: Phases and Strategies Recommended by Sport Psychologists (Study 3)

Abstract

Research has demonstrated that sport injury can serve as a means for athletes to experience growth (i.e., 'Sport Injury-Related Growth' [SIRG]; Roy-Davis, Wadey, & Evans, 2017); however, how SIRG may be facilitated is still unclear. The purpose of this study was to examine how experienced sport psychologists who have worked with injured athletes have nurtured SIRG. Underpinned by critical realism and modified dualism/objectivism, semi-structured interviews were conducted with 10 purposively sampled sport psychologists (females=4, average age of 40.7 years, *SD*= 4.03 years), within the United Kingdom. Data was analysed using content analysis. Findings identified a fluid developmental framework: (a) Reactionary Phase (i.e., emotional venting), (b) Preparation Phase (i.e., educating athlete on recovery processes), (c) Reflection Phase (i.e., identifying personal values), (d) Application Phase (i.e., investing in personal values), and (e) Monitoring Phase (i.e., observing growth). Within each phase, a corresponding set of skills and strategies were identified (e.g., active listening, reflective practice), and tools (e.g., journals, textbooks). Facilitative and impeding factors were also identified and included personal (e.g., level of emotional intelligence) and contextual factors (e.g. sporting culture), with facilitative factors providing positive support that matched athlete's individual needs. These findings extend previous research by offering practitioners who work with injured athletes a developmental framework to nurture SIRG. Future avenues of research and issues associated with SIRG are also discussed.

Introduction

For many years the research concerning psychology of sport injury has tended to focus on the negative effects an injury can have on an athlete. Sport injury was perennially deemed to be a debilitating incident that frequently caused frustration, upset, or depression for athletes (e.g., Brewer, Linder, and Phelps, 1995). However, in recent years a shift towards a more balanced, positive view of the injury experience has begun (e.g. Udry, Gould, Bridges, & Beck, 1997) with some researchers even identifying the beneficial effects of sport injury (e.g. Wadey, Evans, Evan, & Mitchell, 2011). Researchers now recognize that sport injury, although often challenging, may also be associated with a variety of positive outcomes. These diverse descriptions within the sport injury literature highlight the complex and some times turbulent experience athletes undergo after sustaining a sport injury. In order to best understand the sport injury experience, Wadey and Hanton (2013) urge that a more comprehensive approach needs to be adopted, with both negative and positive outcomes investigated and analysed.

One area in the field of psychology of sport injury that has increasingly gained attention is the concept of growth following sport injury. Growth refers to the positive changes that occur as a result of a struggle with a challenging life event (Tedeschi & Calhoun, 2004). In terms of growth following a sport injury, there are at least four possible recovery outcomes for an injured athlete (Wadey et al. 2011): a) never returning to competition, b) returning below one's previous level of functioning, c) returning to one's previous level of functioning, and d) returning above one's previous level of functioning. This programme of research is interested in exploring in depth the latter recovery outcome.

In an effort to better encapsulate the sport injury experience, the term "sport-injury related growth" (SIRG) was proposed in the first study of this research programme. This term was proposed in order to avoid perpetuating the practice of interchangeably adopting a variety of terms such as "thriving" (Wadey & Hanton, 2012), "perceived benefits" (Wadey et al., 2011), "stress-related growth" (Galli & Vealey, 2008), and "post-traumatic growth" (Day, 2013). While these terms are used in reference to similar concepts, it is not clear to what extent the definitions overlap. Therefore, the authors recommend the term SIRG to denote perceived changes, either psychological, physical, behavioural, or social, that propel athletes to a higher level of functioning than that which existed prior to their injury.

This idea of experiencing growth as a result of undergoing trauma is not restricted to sport injury, but has been explored and demonstrated across a variety of circumstances such as war, sickness, and natural disasters, to name a few (Joseph & Linley, 2006). Although research in the field of sport injury has shown increased attention to the concept of growth following injury, only a small handful of studies have been conducted to date (e.g. San Jose, 2003; Podlog & Eklund, 2006; Tracey, 2011). Furthermore, these studies have been atheoretical, lacking a relevant theory regarding growth following sport injury to guide the research. In response to the lack of a context-specific theory, the first study within this research programme focused on developing a theory relating to growth following sport injury. In addition to developing this theory, this research has identified areas of growth that injured athletes may experience, as well as the mechanisms behind this growth. The second study in this research programme was a systematic review that focused on identifying interventions that effectively promote growth for individuals who

have experienced a traumatic or stressful event. The results of this review indicate the importance of the timing of the intervention in relation to the traumatic event, as well as the need for the intervention to match the individual's personal needs (i.e., allowing for emotional disclosure). While this systematic review offered evidence-based practice regarding the potential successfulness of SIRG-promoting interventions, it did not provide any guidance for how these interventions may be best implemented in a practical setting. To address this issue, and gain a better understanding of how to most effectively promote SIRG for athletes, the current study is concentrated on gathering practice-based evidence by investigating the experiential knowledge of sport psychologists who work with injured athletes in an applied manner. Similar approaches have been conducted previously in the sport injury literature and have been proven to good effect (e.g., Beaumont, Maynard, & Butt, 2015). By investigating the knowledge of those who work closely with injured athletes, valuable insight into the sport injury experience and how it leads to growth, will be produced. Furthermore, gathering practice-based evidence on cultivating SIRG in an applied setting may more effectively aid practitioners, such as sport psychologists, who work with injured athletes and assist these professionals to more effectively guide athletes towards the development of growth.

With a focus to gather practice-based evidence, the current research aims to address three purposes: a) to investigate the stages of SIRG development as recognized by sport psychologists who have experience working with injured athletes, b) to identify the skills, strategies, and tools that best help to cultivate SIRG in an applied setting, and c), to determine any factors that may facilitate or hinder the development of SIRG. In

order to address these aims, this study sought to investigate the experiences of sport psychologists who work with injured athletes in an applied consultancy.

Methods

Design and Assumptions

The study followed a qualitative design underpinned by a post-positivism paradigm; that is, critical realism and modified dualism/objectivism. Reality, as it is perceived by humans, is influenced by unobservable events and as a result, the social world can only be comprehended by understanding the structures that produce these unobservable events; modified dualism refers to the effort made to reduce the effect of the researcher so that the trust may be studied in a closer manner.

For the purposes of this study a qualitative approach was employed as this type of research yields rich data that focuses on how people's experiences and how they make sense of the world (Willig, 2013). Ethical approval was granted by the University of Roehampton Ethics Committee before data collection commenced and all procedures aligned with the institutional requirements.

Sampling Procedures and Participants

A criterion-based purposeful sampling strategy (Sparkes & Smith, 2014) was used to recruit participants with specific knowledge and relevant experience of working with injured athletes. Specifically, an inclusion criteria was implemented where to be eligible for this study participants had to a) be a sport psychologist qualified and/or registered through a governing body (i.e., British Psychological Society, British Association of Sport and Exercise Science; Health Care Professional Council); b) practice sport

psychology for a minimum of 5 years; and c) during that time, have worked with injured athletes in an applied setting.

Participants (n=10) were a sample of criterion-based purposively recruited psychologists that met the eligibility criteria. The method of criterion-based purposeful sampling was used in order to ensure that appropriate, relevant individuals were being interviewed, thereby increasing the richness and depth of the data (Milroy, Wyrick, Bibeau, Strack, & Davis, 2012). Possible participants were identified for their expertise and likely contribution of knowledge, specifically related to applied work with injured athletes. Although not a stipulation regarding participation eligibility, it should be noted that the majority of the psychologists taking part in this study have published in the sport injury literature, further increasing their likely contribution to knowledge as participants of this study. The sample consisted of four females and six males, all of which were living and working in the United Kingdom. On average, participants had 9.2 years (SD= 6.6 years) experience working as a sport psychologist. Among these participants (n= 7) were directly employed by teams as the resident psychologist, while others worked on a freelance basis; all participants were currently, or had previously, held positions as lecturers and/or researchers in a university setting.

Data was obtained through interviews, employing a semi structured interview guide. Interviews were deemed the most appropriate form of data collection as this study was exploratory in nature and the use of interviews allow for in-depth, rich details of an experience to be obtained (Tracy, 2010).

Interview Guide

Interviews were conducted using a semi-structured interview guide (see Appendix G) to explore their experiential knowledge of SIRG. Interviews were employed as they are a powerful way to gain insight and understanding into an individual's experience of a certain issue and are also most consistent with people's ability to make meaning through language and affirmations (Seidman, 2013). Using a semi-structured format allowed for a relatively more open, flexible, and interactive interview, providing increased opportunities for the participants to disclose more about their individual experiences, perspectives, and interpretations while remaining focused on the area of interest (i.e., SIRG) (Smith & Sparkes, 2014). The interview guide was co-constructed between my supervisors and myself and comprised of three sections. The first section, *Background*, pertained to the sport psychologist and focused on gaining an understanding of their background (e.g., how they become a sport psychologist), as well as to gain rapport and encourage the individual to relax and more fully engage in the interview process (Patton, 2002). The second section, *Sport Injury Experiences and Growth,* delved into the sport psychologists' expertise regarding the promotion, or hindrance, of growth (e.g., what factors, if any, can be identified that promote growth?). Also explored were recommendations regarding the advocacy for growth as a recovery outcome (e.g., are there any issues for growth being a recommended recovery outcome?). Probes were used throughout the interviews in order to establish clarification and elaboration on the participant's responses. Examples of probes included questions such as "could you tell me more about that?" or "could you provide examples?" and were used in order to ensure thoroughness and understanding (Patton, 2002). The third and final section, *Concluding*,

served to wrap up the interview by confirming that the participants had nothing else to divulge as well as affirming that future contact would be permitted, should any additional data be needed. All of the interviews adopted a conversational tone and the psychologists' answers were often paraphrased and repeated back in order to establish clarification on their responses (Fontana & Frey, 2003).

Accounting for the stressful lives of sport psychologists (Fletcher, Rumbold, Tester, & Coombes, 2011), the majority of the interviews were conducted via Skype. Skype as a data collection tool presents an assortment of both benefits and drawbacks (Sparkes & Smith, 2014). One such benefit is that by conducting an interview over Skype, the interviewer is able to transcend geographical boundaries and access participants who may have otherwise been too distant to reach. Furthermore, by using Skype, the need to arrange a mutual location is eliminated, thus easing logistical (e.g., finding appropriate location) and financial (e.g., travel costs) concerns. Moreover, most interviews take place in a location that is easy and familiar to the participant, thereby already creating a more comfortable interview environment. However, Skype may not be a tool that is available to everyone, and using the software requires an amount of technological knowledge and ability (Iacono, Symonds, & Brown, 2016). Also, participants may experience a range of technological issues (e.g., audio delay) while conducting an interview, which can interfere with the collection of data and the sense of comfort between the interviewer and interviewee. For the interviews that took place face-to-face, locations consisted of in the participant's home or on University campus. Each participant provided written consent prior to the start of the interview. Interviews averaged 62 min (*SD*= 21 min) and were audio recorded. The recording of each interview

was then transcribed verbatim and stored on a password-protected computer. All names were assigned pseudonyms and recognisable features were anonymised to maintain participant confidentiality in line with ethical approval.

Data Analysis

Data were analysed using a conventional content analysis (Hsieh & Shannon, 2005) with a combination of inductive and deductive analysis. Inductive analysis refers to the process of the researcher becoming immersed in the data to allow new and novel insights to emerge, whereas deductive analysis refers to the application of an existing theory or research to the current data from the outset of analysis (Mayring, 2000). The approach of employing both inductive and deductive analysis was utilized as the aim of this research was to link the current findings with previous research by applying the interview guide as the deductive measure while also attempting to remain open to new concepts (Elo & Kyngas, 2007). Content analysis is a systematic, replicable technique of establishing content categorizing from a text based on explicit rules of coding (Hsieh et al., 2005). By using content analysis, the researcher is able to more systematically and easily sift through larger volumes of data (Stemler, 2001). Analysis began by closely reading through the interview transcripts so as to become familiar with the data. After this, the data was analysed using a process of coding. Coding is the act of separating, sorting, and synthesizing data into relevant categories that are then attached meaningful labels. A categorization matrix was used to code and sort data (Elo & Kyngas, 2007) and any text that did not fit within these categories was used to create a new category (Hsiesh & Shannon., 2005). Raw data was gathered together in similar groups, known as lower-order themes (*e.g., allowing athlete to disclose emotions*), which were then clustered to

form higher-order themes (*e.g., engaging in meaning making process*); these themes ultimately categorized the main dimensions (*e.g., role of sport psychologist*). This analytic process involved presenting the findings to one of my supervisors, who acted as a 'critical friend' (Smith & Sparkes, 2014) and provided a sounding board to encourage reflection and exploration of alternative explanations and interpretations of the data.

Results

Analysis of the data resulted in a five-phase development model of how to facilitate SIRG in injured athletes (see Figure 7). Although athletes advance through these phases in a progressive direction, the athlete's journey is also fluid, with the individual at times moving back and forwards between stages. Each phase was identified to require the sport psychologist (SP) to use specific skills and strategies (see Table 7 and tools (see Table 8) to nurture development and enable progression. Participants also reported factors that could help and hinder SIRG during the various phases, which did not involve the SP. Figure 1 provides a visual representation of the five-stage development model. The findings are explored in the account that follows with accompanying verbatim quotations to reflect the participants' perceptions. To begin, each phase of the model will be described along with the corresponding strategies, skills, and tools; the next section will explain key factors that either facilitate or hinder the development of SIRG.

Reactionary Phase

Sport injury was described by the SPs as a stressful experience for most injured athletes, with many expressing heightened negative emotions (e.g., frustration, depression, anger) during injury onset and the early phases of rehabilitation. For many

athletes, particularly those who were injured for the first time, this time was marked by intense reactions which the individual may be unaccustomed to experiencing; therefore, this initial phase involved allowing athletes to offload. Indeed, at the time of injury, many athletes did not have an outlet in which they felt they could comfortably express their injury-related emotions. This absence of appropriate support (e.g., providers are unable or unwilling to provide support) resulted in many athletes suppressing their emotions. Therefore, the main aim of the SPs within this phase is to provide the athlete with a venue in which they could discuss these thoughts and feelings. As one SP put it, "It's just being that safe person outside of their direct environment that they can tell their emotional story to".

Providing a situation and dynamic that enables the athlete to vent unwanted thoughts and feelings is the first step in helping the athlete process their experience and begin moving towards SIRG. Firstly, SPs needed to provide a physical space, such as a quiet office within or away from the sporting venue (e.g., coffee shop), where the athlete felt comfortable and was not at risk of being overheard. Offering an environment in which the athlete felt more comfortable better encouraged dialogue between the SP and athlete, as did reminding athletes of the confidentiality of their conversations. Whether or not the SP knew the athlete prior to their injury (e.g., already worked with an individual, or within the team or governing body), this first phase involved (re)establishing a working alliance between the SP and athlete. This alliance was (re)established through two processes: athlete venting and SP listening - processes that served to make the SP aware of the athlete's thoughts and feelings and allowed the athlete to feel understood,

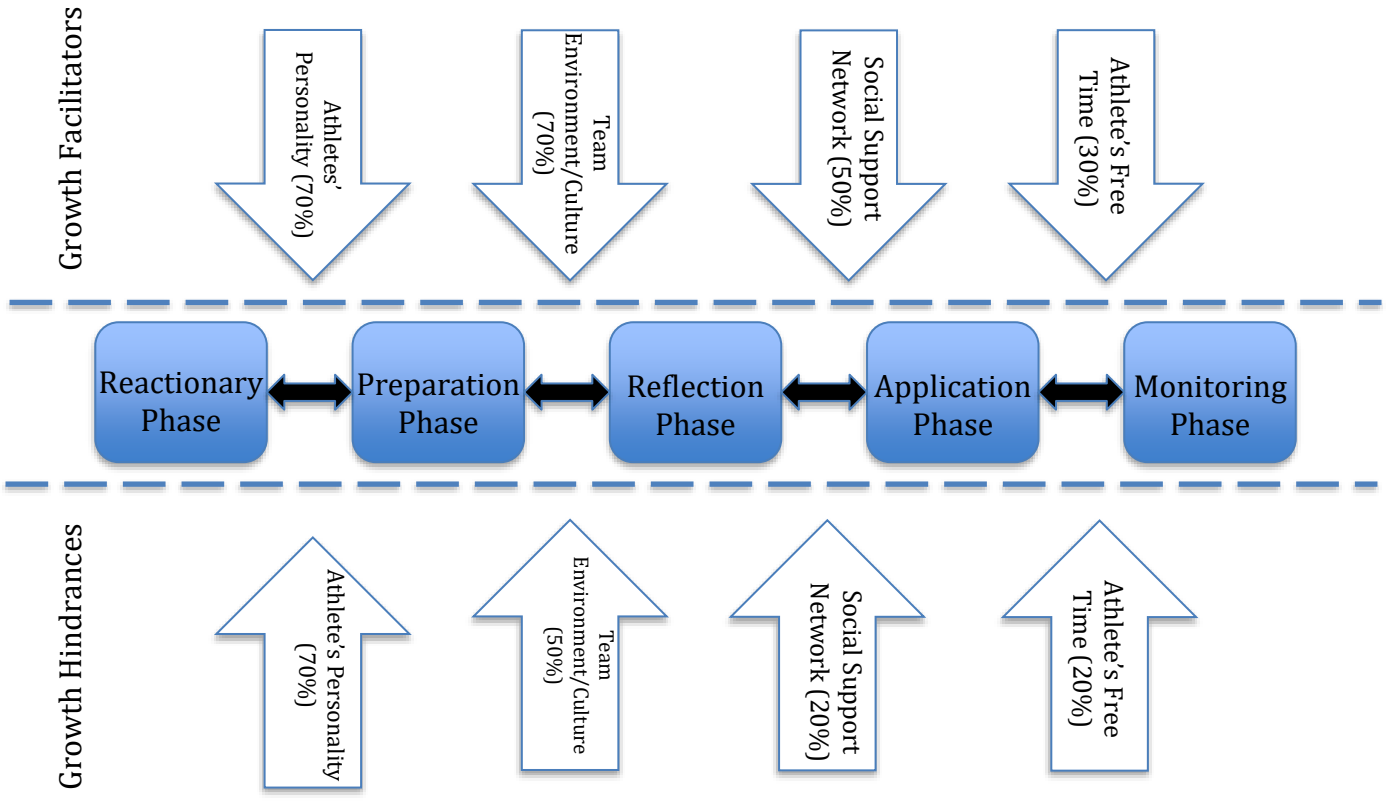

Figure 7. A Conceptual Model of the Development of Sport Injury-Related Growth

which in turn fostered rapport. Although in some cases SPs may have had a working relationship with athletes prior to their injury, in others the SP's working relationship with the athlete began as a result of the athlete sustaining an injury and the athlete seeking or being referred to a SP for help (e.g., by a coach or physio). Regardless of any prior relationship with the athlete, SPs emphasized the importance of active listening. That is, demonstrating their understanding of the athlete's story by paraphrasing and summarizing it back to them, and showing an interest in the person through their body language (e.g., eye contact, head nods) and, facial expressions to reflect the emotional content of the story. Active listening also included listening without offering any advice

or display of judgment, while also demonstrating compassion and emotional comfort to the athlete. Lastly, SPs encouraged the development of rapport of displaying their commitment to the athlete and the relationship they have with that individual.

> Interviewer: What's it like when you first start working with an injured athlete?
>
> Participant: I've seen an element of relief that they've come to you for their first consultation and that they can actually talk about something that they've not talked about with anyone, because in the sporting environment it's quite difficult to show exactly how you're feeling. So you get some of them that are desperate to offload, and you don't have to ask very much before they offload. And then others it takes a bit of time and I don't push too hard, I let them find themselves first in the relationship with me. Sometimes it's just quite natural. I want them to feel that I'm there for them and that they can say anything they want to me and it will never be judged and I will try and help them in any way. And I want to get that across that I'm here for them.

To encourage the development of rapport and facilitate disclosure from the injured athlete, SPs reported using specific skills and strategies. As previously described, an active listening role is critical during this phase, and specific skills and strategies that pertain to this are (a) normalizing the athlete's reactions (e.g., other injured athletes have similar experiences); (b) confirming that their feelings are valid (e.g., it is acceptable for the athlete to feel the way they do), and (c) emotional intelligence and abilities (i.e., knowing when and how to express emotions). The SPs suggested that they needed to be a "sounding board" for the athlete, while also displaying compassion for and interest in the athlete.

> Interviewer: Can you tell me more about how you develop rapport with injured athletes?
>
> Participant: I think, for me, the biggest thing that I can do is actually listen and I think it's a really underused skill by sport psychologists. And I think people always go, 'Oh, I need a technique to work with injured athletes', and actually all people want is to be able to vent, people want to be able to actually just talk about what's happened. I want them to feel that I'm there for them and that they can say anything they want to me and it will never be judged and I will try and help them in any way…And I try to make them feel comfortable. I might remind them that anything they tell me is confidential and that I won't share it with their parents or their coach.

Other techniques advocated included encouraging athletes' self-disclosure through skillful questioning, being patient, using non-threatening and unbiased speech, helping athletes to develop their emotional-vocabulary, and encouraging disclosure to others (e.g., understanding athlete's social network and encouraging the use of available support). SPs often drew upon their contextual and experiential knowledge of sport and the injury experience, for example, using narratives of other injured athletes (e.g., professional athletes in the media) to whom the athlete could relate. These narratives were highlighted as a way for the SP to help validate and normalize athletes' responses. SP self-disclosure to the athlete about his or her own experiences (e.g., working with other injured athletes) can serve to build rapport, and foster an environment of sharing and disclosure. In brief, according to the SPs, the objective of this phase is to allow the

athlete to vent their emotions by creating an inviting environment and dynamic to enable them to share their story, and in so doing, develop the rapport between SP and athlete.

Preparation Phase

Once the SP and athlete established a sufficiently strong working alliance, the next stage involved preparing the athlete for the recovery process by enabling them to educate themselves on the issues related to their injury and recovery. By enabling athletes' education, SPs increased athletes' awareness of challenges both psychological (e.g., periodically experiencing negative emotions) and physical (e.g., rehabilitation set-backs) that they were likely to face during their recovery. Importantly, education helps to normalize the athlete's current and future emotional (e.g., frustration) and physical (e.g., fluctuations in physical abilities) reactions by increasing athletes' understanding of their recovery related processes. Educating athletes and raising awareness of what to expect during recovery from injury also helps to create a more realistic outlook on the recovery process for athletes. Additionally, education also serves to (re-) shape athletes' injury-related appraisals, by highlighting and emphasizing the opportunities the injury may present (e.g., increased free time). However, as athletes typically had a desire to learn about their injury from a physical standpoint, a critical aspect of the SP's role within this phase was to help facilitate the relationship between the athlete and their physiotherapist (e.g., assisting athlete with asking questions related to their injury/rehabilitation). SPs would also often help athletes' education by overviewing the information the athlete had obtained to ensure the athlete understands the material (e.g., why specific rehabilitation exercises are being assigned).

The educational process also consists of increasing awareness of psychological aspects related to recovery (e.g., psychological demands of injury recovery). As information pertaining to the psychological processes was more within the SPs realm, the SP would often either directly educate the athlete (e.g., during sessions) or offer specific materials (e.g., blogs) for the athlete to peruse on their own. The SPs considered it important to raise awareness that the athlete is likely to experience good and bad days, and triumphs and setbacks, both physically and psychologically. This was thought to better prepare the athletes for what lies ahead, enhancing, for example, coping effectiveness with the potentially adverse effects of possible setbacks.

> Interviewer: Can you tell me more about what you mean about education?
>
> Participant: So, it's a large amount of education and awareness early on, trying to educate them in terms of the sort of injury response and rehab process. Things that they might be feeling, why they might be feeling them, those types of things. So, do they understand what the process is about? Do they understand how long it will take? Do they understand what markers they need to hit along the way? Some athletes are very aware of their bodies, aware of themselves, aware of the challenges ahead, but most aren't. So [educating athletes] helps them to understand that their anxiety is normal and to be expected, and that's something I can draw upon further down the line. If they're having a bad day, I can point back to talks that we had at the start, and remind them that this is normal, that they're still on the right track. And so it sets up a good foundation for them, and helps them to not get so discouraged.

Educating the athlete also facilitates communication between the athlete and the SP, and better ensures a mutual understanding of concepts related to the athletes' injury and recovery. By displaying and providing the athletes with information specific to their injury regarding the psychological processes, SPs are not only improving their relationship and rapport with the athlete, but also offering the athlete a sense of the SP's experiential knowledge and ability to help them through their recovery. By fostering knowledge, SPs helped athletes to focus on their recovery, better recognize and perceive their progress during recovery, and focus on maximizing what else they are able to do with their free time (e.g., time out from sport training).

To help enable athlete's education, SPs utilized a range of strategies, skills, and tools. The core strategy during this phase was to help the athlete educate himself or herself by guiding them to relevant information sources. Being aware of relevant information sources required the SP to have experiential knowledge (e.g., knowing which support staff member could offer necessary information) gained either directly or indirectly by working with other SPs or through their own professional development, and contextual knowledge of sporting context gained through prior reading of the literature on psychology of sport injury, and/or their own research in the area. This experiential and contextual knowledge provides the SP with various stories of other injured athletes that the SP can then help relate to the injured athlete they are currently working with. Building up experiential and contextual knowledge would also help to inform the SP as to how to best direct the athlete towards sources (e.g., team support staff) that would further their injury-related education. The SP's experiential knowledge also helped SPs to identify and locate available informational tools, such as books, films, or websites. It

should be noted, however, that SPs expressed a need to remain prudent regarding informational tools as the athlete could misinterpret information.

> Interviewer: Do you have any sources that you tend to draw upon?
>
> Participant: I might make some recommendations about book recommendations, or online resources for psychological stuff. I think academic journals you've got be careful, because the language and how it's put together. So I'm very careful in terms of what I give them…They're going to be spending time with the physiotherapists and strength and conditioning coaches, so part of it is getting them to ask questions. Getting them to understand the mechanics of their injury, so we really want them curious.

Reflection Phase

Once the athlete is on the 'road to recovery', understands the recovery process, and is thinking more rationally, this next phase focuses on the SP working to further develop their understand of the person and not just the athlete. Specifically, the SP will develop their understanding of the athlete as a person by focusing on helping the individual to identify their personal values and interests, so that the SP may more effectively guide the athlete to find significance within their injury experience that resonates with these values. Indeed, the injured individual may not have been living their life according to their personal values and injury provides a chance for them to realign. Values reported by the SPs included relationships (e.g., friends, family), sport (e.g., goals, aspirations), physical self (e.g., strength, conditioning), hobbies (e.g., leisure, recreation), work (e.g., career outside sport, education), and health (e.g., physical, psychological, and mental wellbeing). Should athletes struggle with identifying their

personal values, SPs might help them by asking questions and encouraging the athlete to reflect (e.g., salience of athletic identity). Depending on the athlete's personal preferences (e.g., comfortableness with engaging in reflective practice) and abilities (e.g., naturally partaking in reflective practice), the reflective practice may be performed during consultations (e.g., through dialogue), and/or in the athlete's free time (e.g., through writing in a journal).

For SPs to deepen their understanding of the athlete as a person, a common practice was to better determine the significance of the injury within that individual's life. For examples, SPs would ask questions such as: the importance of sport within the athlete's life, what long-term goals and aspirations that person may have, and how the injury has threatened these goals and aspirations. This understanding of the individual provides the SP with the contextual knowledge to better enable the athlete to utilize and maximize their free time during the recovery process in ways that will better nurture growth. To illustrate, an athlete may identify a high personal value for their athleticism with clear long-term goals in sport. Consequently, the athlete may decide to spend their free time working on aspects that will improve their performance (e.g., ball control) upon return to sport. Should an athlete struggle with realigning with their personal values, the SP may offer guidance in how that individual can adjust their behaviours to better meet their goals.

> Interviewer: What do you mean about reflection, can you tell me more about that?
>
> Participant: It's searching and thinking about what options are there for your future. What do you actually like doing, what is your skill set, and what do other people value about you, what do you value about yourself? So, I try and think of it

in my own head in terms of this is a key transition, there are other identities we need to emerge further, it's opening them up to that process. And asking them: how can we move on, what can we do, who do we need to involve, and so on. It's helping them to recognize alternative routes they might go, and maybe different identities that work for them, and that helps them to not feel so trapped.

For the SPs in this study, experiential knowledge (i.e., knowing when to begin encouraging the athlete to find significance in their injury) and engage in reflective practice was considered to be a delicate process that required attentiveness and sensitivity to the athlete's emotional and mental wellbeing. Skills and strategies essential for this stage included the SP's emotional intelligence (e.g., ability to perceive the athlete's psychological readiness for being challenged). This practice of challenging the athlete refers to the SP questioning the athlete about whether they are behaving in accordance to their personal values. In this way, challenging serves to raise the athlete's awareness about their behaviours and helps the athlete to re-align their actions to better support their personal values and goals. For example, an injured athlete may value their family and their role as a member within it, despite have previously devoted more time to sport than to familial relationships. To address this, the SP may gently steer the athlete to recognize the dissonance between their values and their behaviour and help the individual to identify actions that can be taken to correct this disconnect.

Interviewer: What do you mean about challenging?

Participant: Challenge them as individuals about how they're living, and they're identified values and behaviours. And whether they're actually living by those values, or what adjustments need to be made so their behaviours are supporting

those values. And I may help them to recognize this on their own, but ideally they would be doing it themselves.

The timing of the reflective practice therefore is critical, as challenging the athlete too soon may have a detrimental effect (e.g., emotional outbursts); athlete readiness is therefore key. The SPs generally relied on their experiential knowledge, and suggested the use of a "creep" approach, which would involve the SP slowly beginning to challenge the athlete and guide them towards a reflective practice. This approach is done in an effort to assess the athlete's readiness to be challenged, as well as to not overwhelm the athlete during a stressful time. Should a SP not
accurately address the individual's needs at the appropriate time, the development of growth may be hindered. Tools such as self-reflective journals were used during this stage to aid the reflective process, as were stories (e.g., books, films, personal narratives of others who have experienced similar situations) to which the athlete could compare or contrast their own experiences. In summary, this stage is marked by the athlete engaging in reflective practices that help them to recognize their personal values.

Application Phase

The next phase consists of the athlete developing SIRG through participation in value-related behaviours. This stage can also be conceptualized as the "homework" period, in that athletes begin to take actions to better align themselves with the values they identified during the previous stage. To illustrate, an injured athlete may have realized through the reflective process in phase 3 the importance of their family and friends, and so begins to invest more focus to strengthening and mobilising their social network (e.g., increased participation in emotional disclosure). Likewise, an athlete may

Table 7

Sport Psychologist's Overall Strategies and Skills

Therapeutic Goal(s)	*Practitioner Aim(s)*	*Practitioner Skills*	
Reactionary Phase			
Managing athlete's response to injury	Acting as "sounding board"	Allowing athlete to vent	
		Not displaying negative reactions	
	Enabling athlete's education	Informing athlete reactions are normal	
		Affirming athlete's reactions are valid	
		Connecting athlete's with information sources	
Developing rapport	Listening	Active listening	
		Patience	
	SP presentation	Using non-threatening/unbiased language	
		Displaying knowledge/experience	
		Physical presentation	SP dress
			SP body language
	Matching athlete's needs	Sensitivity/perceptiveness to athlete	
		Reading body language/rhetoric	

Preparation Phase		
Timing therapy	Understanding athlete's needs	Learning about athlete
		Connecting with athlete
	"Creep" approach	Slowly beginning to challenge athlete
		Sensing athlete's readiness
Reflection Phase and Application Phase		
Guiding athlete	"Challenging" athlete	Skillful questioning
		Making appropriate recommendations
		Developing athlete's identity
	Timing therapy appropriately	Knowing when to challenge athlete
		Knowing how to challenge athlete
Reshaping athlete's response to injury	Helping athlete recognize opportunities/abilities	Identifying athlete's personal abilities
		Recommendations for activities that support athlete's values
Monitoring Phase		
Relating growth	Identifying growth	Recognizing occurrence of growth
		Encouraging continued participation in growth-promoting activities
	Telling athlete growth as occurred	Knowing when to relate growth to athlete
		Knowing how to relate growth to athlete
	Setting reminders of growth	Journals
		Others

Table 8

Sport Psychologist's Overall Tools

Media	Narratives	Professional athletes
		Fictional storylines
	Internet	Videos
		Blogs
		Forums
		Informational websites
Reflective practices	Journals/diaries	
	Talking to others	
Social support network	Sport	Coach
		Teammates
		Support staff
	Non-sport	Family
		Friends
SP "soft" tools	Intuition	
	Knowledge of athlete	
	Therapy environment	

recognize that they value their sport and so devote their time to improving their skills related to their athletic performance (e.g., practicing ball control). This stage requires more initiative and action on the part of the athlete, as it is characterized by the athlete participating in activities that will ultimately strengthen their values. Within this phase, the role of the SP is to provide guidance and encouragement as and when necessary. However, it is critical that the SP follow the athlete's lead, as the ultimate aim is to enable to athlete to perceive they have the tools to help themselves.

The skills, strategies, and tools used by the SPs depended on the individual and their personal needs. A key strategy during this phase was to guide the athlete to identify how he or she may engage in activities that will uphold their personal values; a strategy which the SPs suggested is generally done through skillful questioning. According to the SPs, once athletes have identified areas that they would like to address, the SP may help the athlete create short-term and longer-term goals (i.e., goal-setting). However, contextual knowledge of the athlete was critical, as SPs needed to ascertain that encouraging longer-term goals would not place too much pressure on an athlete. To enable this, it is important that the SP understands the athlete, their needs, and their goals. Oftentimes, SPs would incite athletes by helping them to recognize their current progress (e.g., improvements made since beginning of rehabilitation programme) and encourage them to continue the actions and behaviours that lead to their accomplishments (e.g., adhering to rehabilitation programme). The following quotation highlights the approach of a SP during this stage:

Interviewer: How do you encourage athletes during this time?

Participant: I'll say, ‘Discuss with me about last week, what were your targets for last week? So it sounds like you've achieved it. Talk to me about those you achieved.’ I'll try to get them to identify things themselves and I can use that and I try to amplify or accentuate with them. And then I relate it to the fact that they have improved. And then we look at their targets for the week after and so goal setting is quite important. And pushing them to set their goals higher and higher until eventually they’ve achieved growth. And they might not even realize it, because all they wanted to do was return to sport, but now they’ve actually come back and they’re better than they were.

Overall, the main objective of this phase is to support the athlete as they engage in the processes that will nurture the development of SIRG.

Monitoring Phase

The final stage identified in the process was that of SIRG. This phase was typified by the athlete achieving growth as a result of their sport injury in one or more dimensions. Although various dimensions were identified by the SPs, it is not the focus of the current research to explore these dimensions, but instead concentrate on the process that led to these instances of growth and the role of the SP within that process. Many athletes did not perceive they had achieved SIRG by himself or herself, but were able to recognize it when the SP pointed it out to them. This highlights the importance of alerting, and reminding, athletes of their progress, and associated growth. By highlighting to athletes the growth they have achieved, SPs are empowering the individual and imbuing them with a sense of ability and accomplishment.

Interviewer: So you’ll point it out to them when you identify growth?

> Participant: You're helping them to facilitate their own acknowledgement of what skills they actually do have to move forward. And actually, just also checking in with them about how far they have actually come as well. And often it is just touch on how much growth has occurred as a result of the situation that they've been through. And how resilient they are, how mentally tough they are. Yeah, if I give you the psychobabble, they're more authentic and genuine in a variety of ways. They're more the person that they want to be and they've learned about themselves, too, about who they are as a person. Maybe before they weren't presenting themselves in a way that was entirely true, and now there's not that mask anymore, so to speak.

In contrast, SPs suggested some athletes are able to independently identify growth - in these instances their role was to help the individual nurture this growth. This recognition of growth often produces what one SP described as an "Aha moment" for injured athletes, serving to legitimize and provide deeper meaning to their injury experience. The results also suggest that developing growth may help athletes to become more in tune with their personal values. Consequently, SPs role included enabling athletes to understand what their life would look like upon returning to sport and how the values they've identified and invested in can be upheld (e.g., creating time to spend with family and friends).

During this phase the SPs adopted a strategy of being more direct in their communication with the athlete as well as encouraging athletes to reflect on their injury experience. For example, the SP may tell the athlete when they observe the development of growth. This requires the SP to have the skills to identify SIRG and be able to relate

this growth to the athlete in a manner that will encourage further progression (e.g., continuing actions and behaviours that lead to SIRG). Other strategies used during this phase take the form of setting reminders pertaining to the injury experience and resulting SIRG, which SPs may help the athlete to set up so as the individual moves forward they will be less likely to relapse into former habits and routines. These reminders, the tools of this phase, take the form of diaries, others around the athletes, or even the SP (should the working relationship with the athlete continue).

> Interviewer: Is there anything you do to try to maintain growth?
>
> Participant: I try to remind them of the accomplishments that they've achieved, and help them to use that experience to help them move forwards. For me, the best ways of that is if they have some kind of reminders, so something that I'll do is I'll get them to keep a diary of the things that happened and some of their struggles. I think it can act as a really nice reminder for people. That you know what, I've been through something that's really difficult, I've come out the other side, I'm much stronger, and this is what I want to do. So for me, that's really important. I think the diary acts as a really nice reminder of keeping that growth going.

During this phase the SP's main goal is to help the athlete recognize their SIRG and help preserve, and further develop that growth as the athlete moves forward.

Influential Factors of SIRG

The SPs identified a number of influential situational and personal factors external to the SP-athlete relationship that either facilitated or hindered the development of SIRG. These factors were: athlete's personality, team culture, social support network,

and athlete's free time. For these factors to facilitate the development of SIRG, they need to meet the athlete's individual needs while prompting them towards growth.

Athlete's Personality. Firstly, an athlete may possess certain personal characteristics that predispose, or prevent, the individual from experiencing growth. Personal characteristics that positively influenced the development of SIRG included an optimistic outlook (e.g., focusing on positive aspects of circumstance), engaging in constructive pursuits (e.g., investing in self-improvement), and coping skills (e.g., disclosing to others). These attributes are instrumental to the growth process as athletes who possess them may be more inclined to fully engage in the recovery process and actively strive to develop beneficial outcomes.

> Interviewer: Can you identify why SIRG may happen for some athletes and not others?
>
> Participant: Some people are very driven, very conscientious and therefore always want to be doing something, they always want to have some options. They're better at managing setbacks and have better coping strategies and more refined, if you like, within that. I think some people do experience relatively positive adaptations following adversity, and they might learn lessons that support them without much external input. So they might get it, or might reflect themselves. Or they might be more predisposed to that sort of self-learning and reflection. It's a pretty crude distinction, but I would say the more mature ones actually go off and invest some time developing themselves.

Conversely, an athlete may have personal characteristics that may hinder the development of SIRG. This not to say that the athlete has inherently negative attributes

but instead may not as readily engage in the SIRG process. Specifically, the SPs noted that athletes who do not develop SIRG might be more prone to pessimism, maladaptive perfectionism, fearfulness, avoidance, and castrostrophizing. These personal characteristics were seen as interfering with the SIRG process as they may result in athletes not being receptive to therapy and/or the potential for desirable outcomes.

Interviewer: What are some factors that you've identified that may hinder growth?

> Participant: Some personality traits may hinder growth. Mm, perfectionism, I think perfectionism can hinder it. I think some individuals who have a perfectionist approach might be more demanding of themselves in terms of their return to competition. They might overdo their adherence, overdo their sort of recovery protocol, and not necessarily learn anything from their experience, or grow as an individual. They might maintain that sort of expectation and that pressure that they place upon themselves and still have the predisposing factors to re-injury.

SPs also identified the athlete's maturity as being an influential factor, with more mentally and emotionally mature athletes more likely to experience SIRG. According to the SPs, more mature athletes better understood and appreciated the potential impact of their injury (e.g., aware it could be the end of their sporting career) and therefore were more likely to engage in activities that would nurture growth (e.g., spending more time with loved ones). In contrast, younger and more immature athletes were suggested to need more assistance, as they may not fully grasp the consequences of their injury, or have the ability to initiate the growth process without help.

Team Environment/Culture. The team culture was also identified to be a factor that may either positively or negatively influence the development of SIRG. A team environment that facilitated growth was suggested to be a club culture where injury was accepted, as opposed to one that discounted injured players. Several SPs explained the importance of a team environment that embraced injured players as still being valuable members of the team where they felt included and appreciated. Indeed, in their role as resident team psychologist many SPs described trying to cultivate a culture of support and understanding, ensuring that injured athletes did not feel relegated or mistreated. Specifically, team members would be instructed how to interact with injured athletes and provide care and support. A key approach to fostering a culture of support was the use of case formulation, in which the different members of the team would meet and discuss the athlete and how treatment for this individual would proceed. Case formulations ensured that all members of the team understood, agreed upon, and enacted a coordinated approach of treatment to safeguard recovery and growth. By having a team environment and culture in which the members collectively strive to encourage growth after injury, athletes are better supported and more enabled to achieve the development of SIRG.

> Interviewer: Why is a case approach important?
>
> Participant: So if a player does get injured, then we have a case approach about it, where the doctor will talk, the physio will be involved and talk. We all highlight what's the best way forward. And how we would communicate to the player, how we work with the player, support the player. We make sure we're all speaking the same rhetoric to that player. So it's very player-focused, we would discuss the player being injured before, how would they normally cope with excessive

demands or negatives or strains that are sort of put on them into playing perspective. So we've all got a good understanding how that person, how that player is socially, family background, and understand that player from a more holistic point-of-view. And it's quite motivating and helpful if the whole of the athlete's team is based on having growth outcomes. The more everyone is singing from the same hymn book, the better.

A negative, or unsupportive environment was conceived as a team or sporting culture that disregarded injured athletes or placed too much pressure on them to make a speedy return to competition. It is important to note that these environments may not be created intentionally, but may be the bi-product of a well-meaning, but ill-informed culture. For instance, friendly urging to motivate the athlete to make a quick recovery was suggested to have the potential to cause undue duress for an injured athlete who was already feeling pressure to return. In a similar vein, coaches and teammates may believe that they are involving the injured athlete in pleasant banter, which instead serves to make the athlete feel ridiculed by their peers. In addition, the team environment may not have a place for injured athletes, resulting in feelings of isolation. Several SPs maintained that keeping the injured athlete involved in the team (e.g., assisting the coach during practices) bolstered their sense of value and contribution and led to a speedier recovery with fewer instances of re-injury. Lastly, a negative team environment was that which lacked cohesion among the various members (i.e., coaches, teammates, support staff), particularly in regard to the injured athlete's recovery.

Interviewer: What do you mean about the team environment having a negative effect?

Participant: So that could be social support working the wrong way. I've got one example where, the players were teasing [the injured teammate], trying to include him in the banter, but they went about it all wrong. It was demoralizing for him. So consequently, that's a lack of empathy around the lad, just because they don't know any better. So we need to work with players about their rhetoric around individuals. Because the lad was sitting there, injured, potentially going, “Yeah, great, I’m getting involved in the banter”. But deep down he’s hurting. So it's making the [teammates] aware of how they can be better supporters for injured players.

Social Support Network. Another factor cited as being influential to the SIRG process was the athlete’s social support network. A social support network was able to positively influence the development of SIRG if it provided effective support (i.e., support that matched the athlete’s individual needs) either emotionally (e.g., providing encouragement) and/or tangibly (e.g., transporting athlete to doctors appointments). A social network was considered to provide effective support if the members within it offered the athlete adequate emotional care (e.g., allowing athlete to disclose about their injury) without placing any pressure (e.g., to make a quick return to competition) on them. Likewise, an athlete’s social support may also help to shape the individual’s response to their injury by being candid about the athlete’s behaviour and/or future (e.g., not returning to sport because the athlete has not adhered to their rehabilitation) and helping the athlete to identify their values (e.g., passion for sport).

Interviewer: Are there any factors you’ve identified that help to promote growth?

Participant: If they're in a good, supportive entourage, a formal and informal one, that's a big one for growth. So the formal one might be medical staff, in professional sport there's one to two medics, there's a strength and conditioning coach dedicated to return to play, amongst others. So having a good team approach to that, so the athlete gets a good supportive environment to help them return to play. And then they've got a good environment away from their sport, so they go home and they've got support from their partner, parents, friends. At least they perceive that they've got a supportive environment. So if you're going to facilitate growth, I think they need to be comfortable, they're rehabbing well, they need support off the field.

A social network that is unable to provide the athlete with the necessary emotional or tangible support is considered to be ineffective and may hinder the development of SIRG. Although social support may have been provided with the best intentions, SPs suggested a poor understanding of the athlete's needs often resulted in increased feelings of isolation and pressure. Parents in particular were noted as unintentionally putting pressure on injured athletes. Although a support network may have been present (e.g., loved ones willing to help), athletes may not have perceived any available support (e.g., did not believe anyone would want listen to them), resulting in feelings of isolation and loneliness.

Interviewer: How have you seen social support hindering growth?

Participant: I'm always getting asked by parents, "What do I do, what do I say to [the athlete] because when I try to talk to them we end up having arguments and then they don't speak to me at all". And I say, "What were you like at that age,

and how would you have reacted?" It takes courage to come speak to someone, so when you've made that effort the last thing you want is to be talked to, because you want to speak. So I think the work around parents is really important, to help them understand how they can support their kids. And it's hard for them because they want to be there for them, but they might not be going about it in the best way.

Athlete's Free Time. The last factor suggested to influence the development of SIRG was the athlete's use of their free time. For most athletes, sustaining an injury meant a break from training, which allowed the athlete to redirect their time and focus to working with a SP, an opportunity that may not have occurred prior to this. Free time also enabled the athlete to further engage in reflective practice, considered central to the development of SIRG. Injured athletes were also able to use this newfound time to invest more time in personal pursuits (e.g., building career outside of sport) and interests (e.g., developing hobbies) (as observed in stage 4, the application phase).

Interviewer: Do you have any suggestions for how athletes spend their free time?

Participant: I usually try and encourage them to search for things outside of sport that give them identity and meaning. It could be exploring spiritual elements of life, taking up musical instruments, reading some literatures, going on holidays to places and experiencing new cultures or a new environment. Any of those that I think would be relevant and possible I would perhaps encourage people to do…to help them feel like their more than just an athlete and can have a life outside of their sport.

These pursuits generally led the athlete to develop more skills and a greater sense of confidence. Spending more time with loved ones often led to increased levels of emotional disclosure (i.e., sharing emotions and listening to others) and a broader social network (e.g., meeting new people). This results in deepened social bonds and a shifting of the athlete's priorities.

Some athletes, however, did not use their free time out from competition to engage in the activities that ultimately led to SIRG, for example, participating in counseling sessions with a professional SP. In the absence of sessions with a SP many athletes were not able to begin the reflection and meaning-making processes that lead to SIRG. This reluctance to seek out or participate in psychology-based counseling might be due to the athlete's lack of time, conflicting schedules between the SP and the athlete, or the stigma associated with psychology (e.g., believing that their peers will perceive them to be weak). Likewise, athletes may not have recognized the various opportunities provided to them by this newfound free time and so did not make any changes to their daily schedules. For example, an athlete may not capitalize on the chance to invest more time towards developing their social network during their recovery from injury and so does not experience any socially-related SIRG.

> Interviewer: What do you mean about [time] being a hindrance?
>
> Participant: Just that working in the club, you see different athletes what they do when they get injured. And some of them go off and invest some time developing themselves, but then there will be others who kind of hang around the club and don't grow, if you like…because they're not doing those things that they need to

do in order to grow. They're not coming in to see me, they're not furthering their education, they're not doing any of those things and so they sort of flatline.

Discussion

The aim of this study was threefold: to develop a contextual framework on the phases of development of SIRG, identifying the skills, strategies, and tools used by SPs within each phase was also examined, and personal and contextual factors that may affect progression between phases. A five-stage model, referred to as the Developmental Model of SIRG in Applied Practice, was constructed (see Figure 7). Specifically, the phases were: (a) reactionary phase, (b) preparation phase, (c) reflection phase, (d) application phase, and (e) monitoring phase. The role of the SP generally consisted of helping the athlete to reshape their cognitive responses to recognize opportunities inherent in their injury experience. This was largely achieved through advocating reflective practices (e.g., journaling) that resulted in the athlete identifying their personal values (e.g., role of sport in individual's life) as well as finding meaning related to their injury (e.g., long- and short-term impact of injury). By finding meaning and identifying personal values, injured athletes were prompted to engage in behaviours (e.g., adhering to rehabilitation programme) that upheld the athlete's desired outcomes (e.g., improving fitness). These actions, typically assisted by the SP, ultimately led the athlete to develop growth across various dimensions.

A major theme to emerge from the findings was the role of the SP within the growth process. Firstly, the SPs provided (received) social support to injured athletes. Social support is critical to athletes as it meets the needs for venting, reassurance, improvement of communication skills, and reduction of uncertainty (McDonald & Hardy,

1990), all of which are reflected in the current findings. In this way, the support offered by the SPs helped to buffer the multitude of demands inherent to the recovery and return to sport processes (Johnston & Carroll, 1998). Effective social support has also been demonstrated to promote adherence to sport and rehabilitation after sustaining severe injury by displaying a genuine believe in the athlete's ability to make a full recovery, thus increasing the athlete's efficacy beliefs (Inigo, Podlog, & Hall, 2015).

The results of this study demonstrate the progression of growth as observed by an outsider, in this instance the SPs working with injured athletes. The data gathered from these knowledgeable professionals complement and extend the *Theory of SIRG* developed in study 1 by questioning third-party witnesses who are able to provide objective information regarding the process of SIRG. Firstly, the SPs of this study related that upon sustaining a sport injury, athletes typically have strong negative emotional reactions, such as frustration, depression, and anxiety. This corresponds with the reactions reported by the athletes in study 1, however, the current results demonstrate the importance of allowing athletes to vent their responses. Specifically, the current results highlight the significance of the SP in providing an outlet to injured athletes, a notion that is shared by Calhoun and Tedeschi (2008), who advocate that those working with individuals who have undergone an adverse event should assume the role of an "expert companion". This refers to the clinician adopting a role that places them alongside the client, listening and learning from the individual to better guide the individual towards growth. Equally, it is important for the practitioner to not set an expectation for the occurrence of growth, as this may place too much pressure on the athlete. Instead, SPs

should realize the potential for SIRG, yet remain patient for the development of growth to occur in a pace that is natural for the athlete (Weiss & Berger, 2010).

The preparation phase perhaps reveals the most direct influence from the SPs, as this stage is typified by the SP assisting athletes with their accumulation of information. Seeking knowledge was likewise demonstrated in the *Theory of SIRG*, however, the results of the current study elaborate on how athletes were better enabled to locate and obtain relevant information through the assistance of an SP. The athletes who participated in study 1 did not universally work with SPs, yet their interest in their injury, and subsequent desire to learn about their experience, was a key theme. While the athletes from study 1 reported making attempts to gather information, the information they gained may not have been entirely relevant (e.g., not pertaining to their query) or may have been out-of-date (e.g., debunked by more recent information). Similarly, athletes may not always be aware of the best sources for information or may not fully understand the information they find. In this way, the SPs were able to help the athlete by directing them towards sources the athlete may not have been aware of (e.g., physiotherapists) and ensure that athletes comprehend the information they received (e.g., offering chances for athletes to affirm understanding of information). The current results indicate that an athlete advancing their knowledge regarding their injury is a critical step towards developing growth, potentially signifying a crucial aspect of the SPs role within the SIRG process.

The reflection phase reveals a strong overlap with the *Theory of SIRG*, particularly in regards to metacognitions and positive reappraisal. The *Theory of SIRG* demonstrates that growth is able to occur through the mechanisms of metacognition and

positive reappraisal, and this tenet is reiterated within the current results. During this stage, SPs reported a practice of challenging athletes on their thoughts and behaviours, which helped prompt athletes to begin reflective practices. By encouraging these reflective practices, SPs were helping athletes to become more aware of their own thoughts. Through sharing and discussing these thoughts, SPs were also able to assist athletes to identify and redirect negative thoughts (i.e., metacognitions) so as to better promote the development of SIRG. Similar reflective practices were identified in study 1, however, without an SP to challenge and guide them, athletes may not have been fully aware of their negative thoughts or redirected these cognitions in an appropriate manner. Likewise, SPs demonstrated assisting athletes to recognize opportunities within their injury experience, and in so doing helped athletes to positively reappraise their injury. By helping athletes to perceive the possibility of beneficial outcomes, SPs are serving to assist athletes to resolve and recover from their adversity (Park, 1998). Additionally, helping athletes to recognize opportunities and positively reappraise their injury may be causing the athlete to adopt a growth mindset (Dweck, 2006), indicating that the individual will thereafter have heightened levels of resilience and a greater sense of seeking challenges that will lead to personal achievement. This SP role is analogous to the external factors (i.e., received social support) found in the *Theory of SIRG*, giving further evidence to how external sources can influence and help injured athletes towards growth.

The application phase also shows an overlap with the *Theory of SIRG*, specifically related to positive emotions and facilitative responses. According to the *Theory of SIRG*, athletes will experience certain positive emotions (e.g., interest) that have associated

facilitative responses (e.g., exploration). By experiencing these emotions and engaging in the facilitative responses, athletes work to build durable resources (e.g., increased knowledge). This is comparable to the behaviours that represent the application phase, as both notions indicate actions towards the development of SIRG. Similar to the reflection phase, the role of the SP within this phase is to help guide the athlete to engage in the behaviours that will encourage SIRG; however, the SPs reported that it is not their aim to instruct the athletes on what actions to take, but to allow the athletes to identify and engage in these actions on their own. In this way, the SPs related keeping with the "expert companion" approach. The athletes from study 1 may have benefited from an expert companion who may have more effectively guided them towards the development of SIRG. Indeed, the athletes of study 1 did not report that they recognized the importance of identifying and realigning with their personal values; however, this was a prominent concept in study 3, indicating that SPs may be able to better encourage the development of SIRG for athletes.

Lastly, the role of the SP is also emphasized in the monitoring phase, particularly as it is the SPs who observe and relate the development of SIRG to the athletes. This places the SP in an important position, as athletes may not readily identify growth within him or herself and therefore benefit from external sources bearing witness to their development. Indeed, the athletes from study 1 related that they did not identify their own growth until it was pointed out to them by another person. By helping athletes to recognize their development of SIRG, SPs are ultimately empowering athletes to move beyond their injury (Tedeschi & Calhoun, 2009).

Another major role of the SP within the growth process was assisting the athlete to restructure their cognitions, which also helps the athlete to reappraise their injury. This finding is consistent with the *Theory of SIRG* as well as the sport injury literature; for example, Lynch (1988) found that helping athletes recognize opportunities presented by their injury was instrumental in his applied work. Realizing benefits and finding meaning purportedly plays a central role in the growth process (Park, 2004; Park, Edmondson, Fenster, & Blank, 2008), and it is finding meaning that helps traumatized individuals cope with adversity (Frankl, 1992). Meaning making, alternatively known as cognitive processing (Park & Fenster, 2004), was a major focus of the SPs in their promotion of growth after injury. This also supports the findings of Weinrib et al. (2006), and McCullough et al. (2006), who found a direct link between growth and cognitive processing. The aims of the SPs also corroborate with the assertions of Folkman (1997), who states that meaning making involves (a) using positive reappraisal, (b) revising goals and planning goal-directed problem-focused coping, and (c) activating spiritual beliefs and experiences. Although positive reappraisal and encouraging a shift of goals and approach-oriented behaviour were emphasized by the SPs, spiritual beliefs were not presented in the current findings. However, this concept could correspond to the SPs focus on athlete's personal values and how these values relate to their injury.

The skills and strategies related in the current findings also mirror skills and techniques reported by athletic trainers working with injured athletes (Larson, Starkey, & Zaichowsky, 1996). Specifically, both the SPs from the current study and the athletic trainers report the frequent use of short-terms goals and encouraging effective communication skills. Also, the athletic trainers and the SPs of this study both expressed

a focus on keeping athlete involved with the team, encouraging positive self-thoughts, enhancing self-confidence, reducing stress/anxiety, improving social support, and reducing depression. However, the athletic trainers stated unfamiliarity with, or inadequacy to appropriately address, the psychological processes related to sport injury. Moreover, the athletic trainers were not focused on fostering growth for injured athletes, a goal which may reflect alternative aims and strategies (e.g., returning athlete at their pre-injury level of functioning). Collectively, results show that the SPs urged athletes to engage in more approach-oriented behaviours, rather than coping through avoidance, which is generally considered a poor form of coping (e.g., Scrignaro, Barni, & Magrin, 2011). As approach coping is largely considered to be a determinant of growth (Park & Fenster, 2004), it may be that the SPs assisted the development of growth by helping athletes to engage with approach-coping behaviours (Calhoun et al., 2000).

This study had both inherent strengths and weaknesses. One strength is that the sample was comprised of experienced SPs with extensive knowledge pertaining to the sport injury process and concept of growth. Furthermore, SPs from both team and private-practice setting were included, thereby providing a more comprehensive understanding of the role of the SP within the growth process across different settings. Nevertheless, this study is not without potential limitations, the first being a restricted geographical range, as all participants were living and working within the U.K., a majority working in the same region. This could potentially limit the generalizability of the findings due to a possible cultural bias; however, several SPs reported that the athletes they worked with came from a variety of cultural and geographical backgrounds. Another potential limitation may be an overrepresentation of certain sports (i.e., rugby

and soccer/football), however, this could be a reflection on the sporting culture and popularity of these sports within the U.K., as well as the frequency of injury within these sports.

The results from this study provide qualitative evidence of the process of growth as observed by an experienced professional. Specifically, the results support previous research in three ways: (a) provides a contextual framework of SIRG in an applied setting; (b) highlights the role of the SP-practitioner; and (c) identifies environmental factors that either positively or negatively influence the development of growth. Practitioners should be aware of their impact within the growth process and make efforts to effectively address the needs to the athlete. This entails treating the person before treating the athlete, and remaining sensitive to the receptiveness of individuals at all times. Applied practitioners should also be aware of the various skills, strategies, and tools required to address the needs of the injured athlete and keep vigilant that the approach used is appropriate for the individual. Ultimately, this study offers a deeper understanding of the conditions under which growth is nurtured, as well as valuable insight into the role of a SP. In this way, the current research lends support to professional working with injured athletes in an applied setting and may contribute to the more effective promotion of growth.

Chapter 6:

General Discussion and Conclusions

Introduction

The purpose of this final chapter is to draw together the findings from this programme of research, provide a critical commentary of its strengths and limitations, and review resultant future research directions and applied implications of future research. The chapter is divided into seven sections: (a) a summary of the aims and key findings of each of the three studies; (b) a synthesis of the results across these three studies; (c) discussion of the theoretical and empirical impact of this thesis; (d) review of the resultant practical implications from the current research; (e) critical commentary on the strengths and limitations of this thesis; (f) recommendations for future research directions; and (g) an overall conclusion for this programme of research.

Summary of Studies

The central purpose of this thesis was to examine the processes related to the development of growth following a sport injury to offer greater insight into how SIRG may be cultivated for injured athletes. While previous research has examined the process through which growth occurs (e.g., Linley & Joseph, 2005) and investigated the promotion of growth following adversity for a variety of subgroups (e.g., Hefferon, Grealy, & Mutrie, 2008), research on growth following sport injury has remained descriptive rather than exploratory. This programme of research, therefore, sought to develop a context-specific theory of SIRG by determining its associated concepts and mechanisms (Study 1); systematically review evidence-based interventions that aimed to promote growth after adversity (Study 2); and examine practice-based evidence of SIRG from experienced sport psychologists working with injured athletes in an applied setting. The following subsections provide an overview of each of the three studies of this thesis.

Study 1: Developing a Grounded Theory of SIRG. This study aimed to explain the processes through which injured athletes experience growth by using a grounded theory methodology to develop a substantive context-specific theory. Employing Strauss and Corbin's (1998) variant of grounded theory, 37 injured athletes representing a range of sports and levels of competition were interviewed. Data collection and analysis was conducted over 24 months and totaled 70 interviews. All interviews were audio recorded and transcribed verbatim and then analysed using open, axial, and selective coding. The theory produced (i.e., *Theory of Sport Injury-Related Growth*) proposes various internal and external factors that enable injured athletes to transform their injury from a potentially debilitating situation into an opportunity to develop and experience growth. Internal factors were personality (e.g., optimism), coping styles (e.g., disclosure), knowledge and past experience (e.g., previous adversity), and perceived social support (e.g., belief that support is available). External factors were cultural scripts (e.g., narratives embedded in sport), physical resources (e.g., accessibility of gymnasium), time (e.g., free time), and received social support (e.g., listening). The mechanisms through which growth occurs are meta-cognitions (i.e., awareness and control over thoughts), positive reappraisals (i.e., inherent possibilities and opportunities), positive emotions (e.g., interest, gratitude, optimism), and facilitative responses (e.g., exploration, reflection, use of negative emotions). According to this theory, injured athletes who have and mobilize these internal and external resources are more likely to experience SIRG through these specified mechanisms. By possessing, embodying, and mobilizing a number of internal and external resources throughout their recovery, injured athletes were

able to challenge negative thoughts and foster positive emotions and facilitative responses to foster growth.

Study 2: Evidence-Based Interventions to Promote Growth Following Adversity: A Systematic Review. One shortcoming of Study 1 is that it did not suggest any form of intervention that may promote growth for injured athletes. Therefore, the goal of this study was to evaluate and identify interventions that may demonstrate successfully nurturing growth for athletes who have sustained a sport injury. To achieve this objective, the study aimed to systematically review evidence-based interventions that sought to promote growth for individuals who have experienced a trauma. A systematic review was conducted and included relevant literature across a range of traumatic experiences. A process of searching and selecting literature across a range of databases (e.g., PsycInfo) and journals (e.g., *Journal of Loss and Trauma*) according to preplanned criteria (i.e., study must be an intervention, population must have experienced adversity, intervention must have been aimed at promoting growth, and must have been published in a peer reviewed journal) yielded 34 studies. Across these studies, three types of interventions were identified: emotional processing, cognitive processing, and combined technique. Examples of successful interventions include expressive writing, narrative exposure therapy, peer counseling, individual therapy, cognitive-behavioural stress management, and Interactive Guided Imagery. Mechanisms identified or suggested by the researchers of the studies that were shown to lead to growth were cognitive restructuring and reappraisal, which aligned with the findings from Study 1. The duration and timing of the intervention in relation to the traumatic event and the importance of the intervention meeting the needs of the participants emerged as important implications for

practitioners working with injured athletes to consider. By reviewing evidence-based interventions aimed at promoting growth after adversity, this study offers practitioners working with injured athletes valuable insight into how growth may be more effectively nurtured. While this study provided valuable insight into how growth may be encouraged for injured athletes, it is limited in that it only pertains to evidence-based research. It was therefore the aim of Study 3 to consider practice-based evidence by qualitatively investigating knowledgeable individuals within the field of sport psychology.

Study 3: Practice-Based Evidence of Facilitating Sport Injury-Related Growth: Phases and Strategies Recommended by Sport Psychologists. Building upon and complimenting Study 2, the purpose of this study was to examine practice-based evidence of SIRG by examining the perceptions of sport psychologists who have worked with injured athletes. Specifically, it aimed to identify the phases of SIRG development, the skills and strategies used to promote SIRG, and the personal and contextual factors that encourage and/or impede SIRG were also identified. In total, 10 participants (males=6, females= 4, M_{age}= 40.7 years, SD= 4.03 years) living and working within the United Kingdom were purposively sampled for their experiential knowledge of sport injury and SIRG. Data was collected using semi-structured interviews and analysed using content analysis. Data collection and analysis was underpinned by critical realism and modified dualism/objectivism. Findings identified a fluid development framework consisting of five phases. These phases are: (a) Reactionary Phase (i.e., emotional venting), (b) Preparation Phase (i.e., educating athlete on recovery processes), (c) Reflection Phase (i.e., identifying personal values), (d) Application Phase (i.e., investing in personal values), and (e) Monitoring Phase (i.e., observing growth). Each phase had a

corresponding set of unique skills and strategies (e.g., active listening, reflective practice), and tools (e.g., journals, textbooks) the sport psychologists would draw upon to address the athlete's current needs. The sport psychologists also reported a number of personal (e.g., level of emotional intelligence) and contextual factors (e.g., sporting culture) that work to either promote or hinder growth, with facilitative factors providing positive support that matches the athlete's individual needs. These findings offer practitioners working with injured athletes a development framework to nurture SIRG. In this way, the current study extends previous research and helps to bridge the gap between theory and practice.

Synthesis of Results Across Studies

The findings of Studies 1 and 2 resonate with the theory of SIRG developed in Study 1 (see chapter 3). The findings of the two latter studies support many of the factors identified in the *Theory of SIRG*, namely, the importance of personal and situational factors to the growth process, as well as the major role of metacognitions and positive reappraisal. The results of the *Theory of SIRG* (see Figure 1) show that athletes are influenced by a variety of external and internal factors. External factors include: cultural scripts (e.g., narratives embedded in sport), physical resources (e.g., rehabilitation equipment), free time (e.g., time off from training), and received social support (e.g., listening to athlete). Internal factors included: positive personality (e.g., optimism), coping styles (e.g., planning), knowledge and prior experience (e.g., previous injury), and perceived social support (e.g., believe support is available). Many of these factors concur with the personal and situational factors identified by the SPs of the current study. Personal factors identified by the SPs were athletes' positive personality (e.g.,

conscientiousness), athletes' maturity (e.g., awareness of potential impact of injury), and athletes' free time (e.g., reallocation of time previously spent on training), while environmental factors consisted of athletes' social support (e.g., athletes' family), athletes' environment (e.g., culture of sporting club), and the SP's access to the athlete (e.g., frequency of sessions).

The findings from Study 3 not only supports the factors identified in the *Theory of SIRG*, but also extends these findings by revealing how these factors can positively or negatively influence the development of growth. These are the factors that sport psychology consultants needs to account for and be mindful of in their practice with injured athletes. Indeed, the *Theory of SIRG* was developed with the sole focus of identifying factors and mechanisms that promote growth after a sport injury. While this aim was shared by the current study, findings also include influential factors that may act to debilitate the development of growth. Facilitative influential factors encourage the development of SIRG by meeting the personal needs of the athlete while also encouraging the notion of growth. Conversely, impeding factors delay or halt the athlete's progression towards SIRG by increasing athletes' duress and preventing and/or distracting athletes from engaging in the behaviours that lead to SIRG. To illustrate, an injured athlete's social support network, which may include the SP, can facilitate growth by allowing the athlete to express their thoughts and feelings, reminding the athlete of their passion for sport, and pointing out opportunities. In this way, the social support network ensures the athlete feels cared for while also helping the athlete to alter their reactions to their injury and begin to identify desirable outcomes. A negative social support network is one that does not meet the athlete's needs, for example, not providing

an outlet for the athlete to disclose their emotions or displaying judgment towards the athlete. The distinction of facilitative versus debilitative influential factors is crucial, as it highlights the significant impact, either positive or negative, of the factors surrounding and influencing athletes. Further investigation may reveal similar trends between the internal and external factors of the *Theory of SIRG.* Although not currently represented in the *Theory of SIRG*, the potentially debilitative nature of personal and environmental factors should be considered when working with injured athletes to better ensure that athletes receive appropriate treatment.

Theoretical and Empirical Impact of this Thesis

This section highlights the contributions to theory and research in the field of the psychology of sport injury made by this programme of research. This section is divided into two subsections. The first subsection, *Theoretical Impact*, describes how the studies of this thesis have supported and extended models of sport injury and theories of growth following adversity. The second subsection, *Empirical Impact*, discusses the ways the findings of these studies extend previous research examining sport injury or growth after adversity.

Theoretical Impact. Not only has this thesis developed its own original theory of SIRG, but it also supported and extended several related models and theories. In particular, it has supported and extended the Integrated Model of Psychological Response to Sport Injury (Wiese-Bjornstal et al., 1998). This model hypothesizes that personal and situational variables will influence athletes' responses (i.e., thoughts, feelings, and appraisals) to their injury and rehabilitation. Study 1 supports the effect of several personal (e.g., injury severity, personality, motivation, athletic identity, coping strategies)

and situational factors (e.g., provision of social support, rehabilitation environment) on athletes' responses to injury. Support for these findings are reiterated in Study 3, with sport psychologists also identifying a variety of personal (e.g., personality) and contextual (e.g., injury severity) factors that influence an athlete's response to injury. Yet, while support was provided for the personal and situational factors, a limitation of the integrated model is that it is descriptive rather than explanatory in nature. The thesis, therefore, extend this model by providing a detailed explanation of the processes through which SIRG occurs (i.e., meta-cognitions, positive reappraisal, positive emotions, and facilitative responses).

This thesis also expands on Wiese-Bjornstal et al.'s Integrated Model by ascertaining the dimensions of growth unique to SIRG. Currently, the Integrated Model only describes the sport injury process as affecting an athlete physically or psychologically and does not include any behavioural or social adaptations that may have occurred as recovery outcomes. Contrastingly, Study 1 shows that injured athletes can experience recovery outcomes (e.g., SIRG) across four dimensions: physiological, psychological, social and behavioural. While the focus of Study 3 did not include determining the dimensions of growth related to sport injury, the results supported the four dimensions identified in Study 1. These dimensions of growth, although categorized into three separate groups, were typically interconnected, with components from the different dimensions often working in tandem. To illustrate, athletes reported that their injury experience resulted in a desire to take better care of their bodies (psychological) and so made greater efforts to adhere to their rehabilitation programme, correct the issues that led to their injury occurring (behavioural) which resulted in greater muscular

development and improved techniques (physiological). Through engaging in this dynamic cycle, many athletes lowered their risk of future injury. This is an important implication, as it could potentially provide comprehension into how injuries may be better prevented for athletes. Future research should explore this issue to determine greater understanding of how injury may be more effectively prevented (cf. Williams & Andersen, 1998). Furthermore, the athletes of Study 1 and the sport psychologists of Study 3 reported that progressing through this cycle frequently led to improvements in their sporting performance and well-being, an exciting implication that should be further investigated in future research.

This thesis also support and extends several other models and theories outside the field of the psychology of sport injury, namely the Organismic Valuing Theory (OVT; Joseph & Linley, 2005) and the Broaden-and-Build Theory of Positive Emotions (Fredrickson, 2013). According to OVT, an individual will achieve one of three outcomes after experiencing a traumatic event. These three outcomes are assimilation (i.e., returning to pre-trauma baseline), negative accommodation (i.e., returning below the pre-trauma baseline), and positive accommodation (i.e., returning above the pre-trauma baseline). Positive accommodation indicates the development of growth and refers to an alteration in an individual's worldview resulting from successful processing of the information connected to their trauma. OVT posits that successful processing is aided by the support offered by the environment, particularly support from the individual's social network that aligns with their psychological needs. This tenet is reinforced by the findings of Study 1, 2 and 3, which demonstrated the important role the environment has in the growth process. Yet, the *Theory of SIRG* also challenges OVT, as OVT suggests

that an individual's worldview becomes altered as the result of a "shattering effect" (disruption to a person's assumptive world; e.g., Joseph & Linley, 2006). Although the athlete-participants of Study 1 experienced heightened levels of stress after sustaining a sport injury, a shattering effect was not represented in the findings. Consequently, the *Theory of SIRG* demonstrates it is not always necessary for individuals to experience a shattering effect to develop growth, and so challenges this principle of OVT. Finally, OVT does not identify nor suggest the role of positive emotions within the growth process. By recognizing and revealing the importance of positive emotions for the development of SIRG, the current findings extend OVT.

The findings of this thesis also support and extend Fredrickson's Broaden-and-Build Theory of Positive Emotions (1998). According to Fredrickson's theory, positive emotions work to "broaden" an individual's momentary thought-action repertoire as well as "building" that individual's resources (i.e., experience growth). This assertion is upheld in the findings of Study 1, with athletes exhibiting a process that mirrors that described by Fredrickson. For example, athletes reported that receiving positive support from their social network instilled them with a sense of gratitude (i.e., thought-action repertoire) which then created pro-social urges (e.g., "giving back") that ultimately resulted in deeper social bonds (i.e., durable resource). The findings of Study 2 and 3 also supported this theory by further highlighting the significance of positive emotions within the growth process. However, it is important to note, that while Fredrickson's theory is relevant to the development of SIRG, it was not developed to explain growth, nor does it explain the personal and situational factors that might engender positive changes for injured athletes. The recognition of positive emotions within the sport injury experience

was an unanticipated finding, particularly as previous research has emphasized that negative emotions typically characterize responses to and rehabilitation from sport injury (Evans & Hardy, 1995). Taken together, these findings support OVT and the Broaden-and-Build Theory. These results also extend the Integrated Model of Wiese-Bjornstal et al. (1998) by showing how emotions are not only manifested by the individual, but may also include those close to the athlete.

Lastly, the findings of this thesis resonate with, and extend, Dweck's (2006) work on fixed vs. growth mindsets. According to Dweck, individuals fall along a spectrum ranging from fixed to growth mindsets, with those closer to growth mindsets possessing more resilience when faced with setbacks and a greater tendency to seek personal challenges. The results from Study 1 lend support to this theory, as the athletes reported seeing their injury as an opportunity for personal development in the same manner as those who possess a growth mindset. Studies 2 and 3 further support the relationship between growth mindsets and SIRG, as individuals who were successfully guided to positively view their challenging experience as an opportunity for personal achievement were able to develop a degree of growth. Consequently, growth mindsets may be a critical component to the SIRG process and exploring how to more effectively guide athletes towards the growth mindset end of the continuum may more successfully produce SIRG. Yet, it should be noted that Dweck's work on fixed vs. growth mindsets does not include research regarding growth following a traumatic experience, and therefore the approach for teaching a growth mindset may differ for those suffering from a recent trauma.

Empirical Impact. This thesis has not only supported, challenged and extended previous models and theories, but has also extended the literature in several ways. Firstly, this body of research has integrated two bodies of research; that is, the psychology of sport injury (e.g. Brewer, 2010) and growth following adversity (e.g., Barskova & Oesterreich, 2009). Secondly, findings from Study 1 and Study 3 extend research on growth by demonstrating the categories of growth that are unique to the sport injury experience (i.e., physical growth). Thirdly, this programme proposes a novel conceptualization (i.e., Sport Injury-Related Growth [SIRG]), which is offered in an attempt to create a unified, identifiable, and context-specific term that will serve as a foundation for future research. Fourthly, the three studies of this thesis identified meta-cognitions and positive reappraisals as the mechanisms through which growth occurs, thus supporting previous research on the growth process (e.g., Moore, Varra, Michael, & Simpson, 2010; Salim, Wadey, & Diss, 2015b, Salim, Wadey, & Diss, 2015b; Williams, Taylor, & Schwannauer, 2016) that similarly recognized these concepts. Fifthly, Studies 1 and 3 identified the factors that promote or hinder growth following sport injury, thereby unifying and extending previous research on growth (e.g., Owens, 2016; Shuwiekh, Kira, & Ashby, 2017) and sport injury (e.g., Wiese-Bjornstal et al., 1998) by demonstrating how dispositional factors, such as athlete's personality, and situational factors, such as athlete's free time, serve as predictors of SIRG development. Sixth, Study 2 identified interventions that facilitate growth and which may potentially demonstrate success for encouraging SIRG, and so extended and supported previous research regarding growth-promoting interventions (e.g., Roepke, 2015; Sippel & Lyons, 2016). Seventh, Study 3 determined a fluid conceptual network of SIRG in an applied

setting. Finally, Study 3 identified the skills, strategies, and tools that aid practitioners to nurture SIRG; in these ways, Study 3 extends previous research on applied practice for injured athletes (e.g., Steptoe, Barker, & Harwood, 2014; Williams, 1993).

Practical Implications

The collective findings of this programme of research highlight the importance of the role of applied practitioners, such as sport psychologists, within the growth development process. In terms of recommendations, first and foremost, applied sport psychologists should raise their awareness of the factors and processes through which SIRG occurs and its dimensions (i.e., Study 1). For some time now, injury has been considered as a deleterious event with negative consequences (Wadey & Evans, 2011). However, this thesis suggests that injury can be transformed from a debilitative experience into an opportunity for growth and development, which can have important implications for athletes' performance and well-being. How this transformation process occurs was identified in Study 3, which also emphasized the impact an applied practitioner can have on the development of growth for an injured athlete. Indeed, the results from this study demonstrates that applied sport psychologists are able to nurture SIRG by maintaining a growth orientation while guiding, and redirecting, athletes through the phases of the recovery process. Specifically, applied practitioners are able to offer injured athletes an outlet for their venting, enable athlete's education, be a source for advice and recommendation, if needed, and help athletes recognize the achievement of growth. Therefore, it is crucial that applied practitioners identify the athlete's current needs and respond by adjusting their own role (e.g., shifting from a listening role to an

educational role). Moreover, applied practitioners should be aware of the influential factors surrounding injured athletes and be cognizant of the ways in which athletes' responses to injury may be manipulated by both internal and external resources. Findings from Study 3, as well as Study 1, reveal that applied practitioners need to address athletes' metacognitions and ensure that positive thoughts are cultivated while negative thoughts are challenged. This will encourage athletes to reappraise their situation and recognize available opportunities. Results from Study 2 further emphasize the role of cognitive restructuring and reappraisal during the recovery process, and provide evidence that demonstrates the importance of appropriately timing therapy after an adverse event. This timing aspect was also supported in the results from Study 3, which also advocates that applied practitioners begin to slowly engage injured athletes in the SIRG process, so as not to overwhelm the individual during an already stressful period. Studies 1 and 3 also suggests that practitioners should be attentive to the resources available to the athlete personally and encourage injured athletes to mobilize these resources in ways that will be conducive to fostering growth for that individual. Lastly, Study 2 provides insight into how applied practitioners may encourage SIRG, but providing evidence of activities (e.g., expressive writing) that demonstrate successfully promoting growth.

As previously mentioned, Study 2 emphasized the importance of interventions being timed appropriately and matching individual's personal needs. Timing the interventions appropriately proved to be problematic, as implementing interventions too soon may not provide the individual sufficient time to process the trauma, whereas waiting too long to initiate an intervention may result in the individual already processing the trauma but in a negative direction. Altogether with the findings of Studies 1 and 3, it

could be recommended that practitioners allow a brief, initial period of adjustment after injury in which athletes are able to vent their emotions. During this period it is necessary for applied practitioners to give injured athletes an outlet for their emotional venting so that they can begin to move forward in the SIRG process, as well as develop a working relationship and good rapport between athlete and practitioner. Once the athlete and practitioner feel confident in their working relationship, and the athletes begins to display signs that indicate their readiness to move forward (e.g., planning for the future), the practitioners can then start to introduce SIRG-promoting interventions. The results of Study 2 further emphasize the importance of restructuring cognitions and shaping appraisals in the promotion of growth. Consequently, practitioners should remain vigilant to the significance of these concepts when working with injured athletes. Finally, Study 2 identified and proposes the potential of specific interventions (e.g., written disclosure, individual therapy, Interactive Guided Imagery) to be implemented in the promotion of SIRG.

Study 3 demonstrated that applied practitioners working with injured athletes play an important role in the development of SIRG. Specifically, Study 3 showed that injured athletes will progress through several fluid stages and so practitioners should be aware of these stages and the oscillatory patterns represented in the SIRG process. Consequently, applied practitioners should remain mindful of the athlete's current needs (e.g., shift of emotional state) and be prepared to adjust their approach in response in any changes that occur. This requires applied practitioners to cultivate the skills, strategies, and tools that correspond with each phase and employ those that will best match the personal needs of the athlete. It is therefore important for the practitioner to have an in-depth understanding

of the athlete and a sufficient arsenal of therapeutic skills, strategies, and tools and be mindful of which of these will best correspond with the athlete's current needs. Lastly, Study 3 identified personal (e.g., athlete's personality) and situational (e.g., team environment/culture) factors that influence the SIRG process, either positively or negatively. As a result, practitioners should be conscious of the effects of these factors and be knowledgeable in ways that these factors can be endorsed or reduced in order to urge growth.

Drawing upon the results from these three studies, particularly concentrating on the results and insights produced by Study 2, this programme of research offers a preliminary recommendation for a SIRG-promoting intervention based around a buddy system structure, with one athlete who is further along their recovery (i.e., "navigator") being paired with an athlete who has recently sustained a similar injury (i.e, "sojourner"). This intervention is further advised to comprise of a physical activity component, for example, pairing injured athletes together to complete rehabilitation exercises. This intervention is an adaptation of the Giese-Davis et al. (2006) study that likewise paired women with breast cancer into a "sojourner" and "navigator" role, as well as drawing inspiration from various qualitative interventions that revolved around a physical challenge (e.g., climbing Mt. Kilimanjaro, Burke & Sabiston, 2010). This particular intervention, that is to say, that of a navigator and sojourned system, is proposed as the key components of its success resonate with the findings from both Studies 1 and 3. This is specifically in regards to (a) the role of received and perceived social support; (b) the intrinsic opportunities to increase emotional disclosure; (c) a development of social bonds; (d) the inbuilt chance for advancing personal knowledge; and (e) the element of

interpersonal challenges resulting in heightened physical achievement. The role of social support is paramount within this intervention design, and it is suggested that injured athletes be provided with various icebreaker activities that will help to naturally quicken the bonding process. For the "navigator"- the athlete who has been injured for a longer length of time- their role would consist of helping to guide the "sojourner"- the athlete more recently injured- to prepare them for the recovery process. This is not only advantageous for the sojourning athlete, who is better prepared for what to expect, but the opportunity to guide another athlete would also hopefully imbue the navigator with a newfound sense of meaning and purpose behind their own injury. Meaning-making was a prominent theme in the findings of both Study 1 & 3, and is considered to be a key aspect of the SIRG development process. By encouraging an element of meaning-making within this intervention, navigators may be more prone to positively appraise their injury and experience more positive emotions, in this way, navigators may be better positioned to experience a degree of SIRG. Relatedly, by pairing athletes together, this intervention may promote sharing experiences, which would also hopefully result in increased emotional disclosure for both parties. This heightened emotional disclosure would not only provide the athletes with increased coping skills, but would also likely lead to strengthened social bonds, particularly between the navigator and sojourning, but also with potential others, as athletes may engage in more disclosure with those around them. The results of Study 1 and 3 likewise exhibit the importance of emotional disclosure within the SIRG process and it is commonly through disclosure that athletes begin to build up and mobilize their social support. In regards to learning, the navigator could help to impart practical knowledge to the sojourner by sharing with them useful information

gathered from their own injury, for example, information related to anatomy or correct techniques for completing rehabilitation exercises. Sharing this knowledge could likely also have the effect of promoting healthier habits that decrease the risk of future injury. Study 1 demonstrated the significance of learning with the SIRG process, with injured athletes frequently reporting that their injury incited within them an interest to discover more about their situation and how to overcome it. Furthermore, Study 3 also placed learning in a key role for the SIRG process, with sport psychologists focusing on preparing athletes for their recovery journey by guiding athletes to educate themselves on the processes involved. And finally, by pairing athletes together, a climate of personal challenge could be cultivated, as the navigator pushes the sojourner to higher levels of physical (e.g., increasing rehabilitation goals) and personal (e.g., developing hobbies outside of sport) achievement.

However, it should be cautioned that this particular element should be monitored, as athletes may be more prone to possess a competitive personality which may cause the individual to push too hard too quickly to achieve a goal, particularly a physical goal, and could therefore risk re-injury. Instead, practitioners of this intervention should aim to adopt an environment that supports achievement, but also helps participants to set realistic goals. Similar elements of helping athletes to appropriately pace themselves in their recovery were found in Study 3, with sport psychologists reporting that their role involved helping athletes set and execute personal goals. Study 1 also shared this aspect, albeit in a slightly different manner, with the athletes reporting that their goals were often monitored and directed by their social support, for example, their physiotherapist. Lastly, by adding in an element of physical activity, it is hoped that an intervention of this design

will be more appealing to athletes and help to create a greater sense of comfort and ease which will further expedite and enable to SIRG process. Although a tentative proposal for an SIRG intervention, this design does include many of the critical aspects from all three studies and serves to draw the results together in a way that may better encourage SIRG in an applied practice.

Strengths and Limitations

Although this programme of research has contributed to the literature, these studies are not without limitations. To begin, more forms of data collection, such as diaries or observation, would broaden the findings from Study 1. Also, participation for this study was mainly concentrated on athletes located in the U.K., and the results do not account for potential cultural differences. Lastly, the figure of the theory produced in Study 1 may give a false impression of a linear progression and so the potential of reciprocal relationships between the identified concepts should be further explored. Study 2 is potentially limited by the inclusion of research of various quality; this may weaken the overall results of the review. Also, although several search terms and databases were utilized in the search for relevant literature, there remains the possibility that not all the applicable research was located and included. Finally, the studies may not be directly relevant to injured athletes, and so the interventions may not demonstrate the same degree of success if applied to a population of injured athletes. In regard to Study 3, one-shot interviews were the method of data collection that was employed. This may limit the findings, as participants may have recalled relevant information after the interview had occurred. Also, although sport psychologists were purposively sampling for their extensive experiential knowledge, this created a concentrated geographical focus, with all

participants living and working in the U.K. at the time of data collection. This may over represent the mentalities and culture of this area. Additionally, the majority of the injuries (i.e., lower limb) and sports (i.e., rugby and soccer/football) related by the sport psychologists may present a bias in the results. However, this could be a reflection of the popularity of these sports within the culture as well as an indication of the frequency of injury, and injury-types, within these sports. Future research should look to explore the phases of growth among different geo-locations and sports, as well as any differences in the SIRG process for different types of injury.

Despite these limitations, this programme of research has a number of key strengths. First, Study 1 developed an original and substantive theory of SIRG that serves to inform research and applied practice. This theory also helps to bridge the gap between theory and practice. By using a grounded theory methodology, the produced theory stayed closely aligned to the data. Moreover, as this is a substantive theory, it remains open to the ability to be modified and extended by the findings of future research. Study 2 provides insight into evidence-based interventions that may most successfully nurture growth for injured athletes. And the strengths of Study 3 key are the experiential knowledge and qualifications of the sport psychologists interviewed. Also, both team and individual-practice sport psychologists were included, thereby increasing the external validity of the produced conceptual framework. Overall, this programme of research represents a qualitative focus, and although this may be viewed as a potential limitation by those who have different ontological and epistemological beliefs, given the exploratory nature of the two qualitative studies (Studies 1 and 3), qualitative methodologies were deemed the most suitable to achieve the research questions and aims.

Indeed, these two studies produced rich, in-depth data that provides greater insight and comprehension of the sport injury experience and the promotion of growth.

Future Research Recommendations

As a result of this programme of research, a number of recommendations for future research are proposed to further advance the literature. The first avenue of research is to support, refute and extend the Theory of Sport Injury-Related Growth identified in Study 1. Example questions include: Do meta-cognitions, positive reappraisals, positive emotions, and facilitative responses mediate the relationship between sport injury and SIRG? Do internal and external resources moderate the relationship between sport injury and SIRG? Can SIRG impact the performance and well-being of injured athletes following their return to sport? These questions are best answered by using longitudinal research designs. For example, researchers could assess injured athletes' stress responses at injury onset (e.g., Psychological Responses to Sport Injury Inventory; Evans et al., 2008), then monitor their psychological responses throughout recovery by either using diaries or other questionnaires such as the modified Differential Emotions Scale (Fredrickson, 2013) and then assess SIRG upon their return to competitive sport (e.g., Stress-Related Growth Scale; Park et al., 1996).

Second, future researchers should design and test the efficacy and effectiveness of an intervention specifically developed for promoting SIRG. To elaborate, researchers should draw together the knowledge gained from this thesis to create a unique intervention specially tailored to injured athletes with the aim of fostering growth, bearing in mind the unique dimensions linked with SIRG. Not only would this research further expand the literature, but could also offer a critical tool for applied practitioners

working with injured athletes. In terms of methods, future research should look to substantiate the findings of this thesis with alternative methods, such as diaries and observation, and methodologies, such as ethnography, narrative inquiry, and phenomenology. Additionally, researchers could also take a quantitative approach; however, a context-specific measurement of SIRG does not exist and thus should be developed, as this will enable researchers to more effectively encapsulate the experience of SIRG. Future studies should also include longitudinal research, as this will likewise advance our understanding of SIRG and may provide greater comprehension of growth maintenance (e.g., how is growth maintained? Is growth maintenance necessary?). Similarly, an ethnographic approach, particularly an auto-ethnographic study, could offer insight into any concerns regarding the additional pressure promoting SIRG may present to already overwhelmed individuals (e.g., Wortman, 2004). Finally, future research should focus on exploring the development and promotion of SIRG among different sports, cultures, and types of injury. This information would be used to modify and expand on the *Theory of Sport Injury-Related Growth*, in this way serving to further increase understanding of the processes related to SIRG.

Overall Conclusions

The aim of this programme of research was to investigate how SIRG may be nurtured for injured athletes by exploring and identifying the processes related to growth following sport injury. Findings from this thesis have demonstrated that injured athletes experience growth through the mechanisms of metacognitions and positive appraisal, as well as positive emotions and facilitative responses. The surrounding environment and resources available to the athlete will influence these mechanisms, and it is by engaging

with these factors that athletes begin their process towards SIRG. As a group, athletes demonstrated unique areas of growth related to their sport injuries, consisting of psychosocial, behavioural, and physiological growth dimensions. Findings from the research undertaken in this body of research also suggest several promising interventions that may prove beneficial for the promotion of growth for injured athletes. Growth in an applied setting is achieved by practitioners successfully helping injured athletes navigate through various phases by drawing upon relevant skills, strategies, and tools employed to match the athlete's individual needs.

This body of research has helped to advance the field of sport injury psychology in a number of ways. Firstly, this programme has developed an original, context-specific theory that will assist both future researchers and applied practitioners involved in the discipline of sport injury. Secondly, this thesis also produced a conceptual model of the growth process as seen in an applied setting, thereby helping future applied practitioners concerned with cultivating growth for their injured clients. Thirdly, this research reviewed and examined both evidence-based and practice-based knowledge, giving a more comprehensive and developed understanding of the process of growth and how it may be influenced. Lastly, this programme used methodologies that were novel in the field of the psychology of sport injury, specifically conducting a grounded theory study and a systematic review, both of which help to further the literature of this subject. Altogether, this thesis has achieved its aims, contributed to the field of sport injury, and has important implications for individuals within sport who aspire to shift the sport injury experience into an opportunity for elevated functioning.

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Appendices

Appendix A.

Participant Consent Form- Study 1

University of Roehampton London

ETHICS COMMITTEE

PARTICIPANT CONSENT FORM

Title of Research Project: A grounded theory approach to the sport injury experience

Brief Description of Research Project:

This research project is focused on exploring your experience of sport injury. A series of questions will be asked to explore your sport injury in greater depth, and identify any affects your sport injury may have had.

Upon agreeing to participate in this study, you will take part in an interview which is expected to last between 45-90 minutes. This interview will be recorded and typed out word for word. Information that you tell me during this interview may appear in my written report and future publications. The recordings may be heard by my supervisors and any others who will be involved in examining the study. To ensure your privacy and anonymity, your names will be changed and pseudonyms will be used instead.

All information given will be treated with confidentiality, but there is a limit to this: if you disclose a risk of serious harm then I may need to direct you to somebody who can help (i.e., The Samaritans, www.samaritans.org, 08457 90 90 90). All data collected will be stored in password protected computer files and will only be accessible to the applicant (duration 10 years) to ensure that the confidentiality is adhered to. The data will only be stored for as long as it needs to be. Data will be kept for no longer than 10 years, it will then be removed and destroyed. All contact details or any details to identify you will be held in a separate folder from the tape recordings and transcripts to ensure complete confidentiality. No information that will identify you will appear within the written report or any further publications. Approval of the information provided to the investigator will be granted by you before any information is published.

Should you wish to withdraw from the study, please contact Kylie Roy and then the data will be subsequently removed from the files.

Investigator Contact Details:

Kylie Roy
Department of Life Sciences
Whitelands College
Holybourne Aveune
SW15 4JD
Royk@roehampton.ac.uk

0785 713 7175

Consent Statement:

I agree to take part in this research, and am aware that I am free to withdraw at any point. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

Name …Chelsea O'Farrell…….

Signature …Chelsea O'Farrell (electronic signature)

Date …4/22/15……

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Director of Studies Contact Details:

Dr. Ceri Diss
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU
c.diss@roehampton.ac.uk
+44 (0)20 392 3535

Head of Department Contact Details:

Dr. Caroline Ross
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU
C.ross@roehampton.ac.uk
+44 (0)20 8392 3529

Appendix B.

Participant Debrief Form- Study 1

University of Roehampton London

ETHICS COMMITTEE

PARTICIPANT DEBRIEF FORM

Title of Research Project: A grounded theory approach to the sport injury experience

Thank you very much for taking part in our study, we greatly appreciate your contribution. This study was designed to get your point of view about your sport injury experience. This study also aimed to explore your sport injury in greater depth, identify any affects that have happened as a result of your sport injury, and why or why not these changes occurred.

All data gathered during this study will be held securely and anonymously. If you wish to withdraw from the study, contact us and your information will be deleted from our files. All contact details or any details to identify you will be held in a separate folder from the tape recordings and transcripts to ensure complete confidentiality. No information that identifies you will appear within the written report or any further publications.

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Investigator Contact Details:
Kylie Roy
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU

Email: royk@roehampton.ac.uk
+44 (0)795 713 7175

Head of Department:
Dr. Caroline Ross
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU

Email: C.ross@roehampton.ac.uk
+44 (0)20 8392 3529

Director of Studies Details:

Dr. Ceri Diss
Department of Life Sciences

Co-Supervisor's Details:

Dr Ross Wadey
Department of Life Sciences

University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD

C.Diss@roehampton.ac.uk
+44 (0)20 392 3535

University of Roehampton
Whitelands College
Holybourne Avenue
London SW15 4JD

ross.wadey@roehampton.ac.uk
+44 (0)20 8392 3588

If you are feeling troubled or worried about any aspect of the study, or issues it may have raised, you may find it helpful to contact one of the following who will be able to advise you on agencies that can deal with your particular concern:

Samaritans
Website: www.samaritans.org
Tel: 08457 90 90 90

Appendix C.

Participant Information Form- Study 1

Participant Details

Name:

Age:

Type, location, and severity, of injury:

Sport:

Position(s):

Years participating in sport:

Current performance level:

Highest level of performance:

Previous Injuries:

Interview date:

Time begun:

Time ended:

Duration of interview:

Appendix D.

Interview Guide- Study 1

Section 1: Introduction

Not recorded

Firstly, thank you for agreeing to take part in this study. My name is Kylie Roy and I am currently undertaking my Ph.D. at the University of Roehampton (UR). The aim of this interview is to gain an in-depth understanding of your ACL injury experience and the effects this has had on you, both good and bad. Please do not be concerned if this is somewhat confusing, the questions in the interview will help you recall this information. The information you provide will be used in my Ph.D. thesis and may also be published in scientific journals so that other athletes, coaches, and sporting personnel may benefit from your experiences. All your responses will remain anonymous and any information you provide will be stored in a secure area that is only accessible to me and my supervisory team. To ensure a complete and accurate account of this interview, I will be using a tape recorder.

Before starting the interview I would like to confirm your rights as a participant. This interview is about your experiences and as such if you feel uncomfortable answering any questions then you are free to decline to comment or ask for the interview to be stopped. I would rather you declined to comment rather than answer in a way that you think I or someone else would want you to. Please take your time when responding to questions during the interview, however, if you cannot recall let me know and do not guess. There are no right or wrong answers to any of the questions. If you have any questions yourself please feel free to ask them at any point, especially if I ask something that is not clear. Finally, please remember that I am interested in gaining an overall understanding of your injury experience;

therefore, please do not hesitate to include anything that you believe had an impact on you during this time, such as family issues, relationships, academics, work, and so forth. Okay, before we begin, do you have any questions?

Section 2: Sporting Involvement

Begin Recording

Okay, to begin I'd like to gain an understanding of your involvement in sport and what role sport injury has played in your competitive career.

1. **Okay, how long would you say you [have/were] been involved in competitive sport?**

   Probe: Who or what got you involved in competitive sport?

   Probe: What made you decide to participate/focus on your current sport?

2. **What is your current participation in sport?**

   Probe: How is this different from before your injury?

   Probe: What is the highest level you have competed at in any sport?

Section 3: Injury Onset

Okay, great, now let's move onto your ACL tear. I'd like to ask you questions regarding three stages of the injury process: injury onset, rehabilitation, (and your return to competitive sport). Again, if my questions are unclear, or you can't remember, please let me know and we'll move on.

1. **What was the exact date of your most recent ACL injury?**

   Probe: Was this the first time you've torn your ACL?

Probe: Has this been your most serious injury?

2. Okay, can you tell me what happened when you became injured?

Probe: Where were you when it happened? (Location, practice, competition/game, etc.)

3. What was your initial reaction when you realized you were injured?

Probe: What were you thinking?

Probe: How did these thoughts influence the way you felt about the situation?

Probe: How did these thoughts/feelings/behaviors change prior to the surgery? (E.g. did you withdraw from others, lash out at your loved ones, eager to learn more about surgery)

Section 4: Surgery

Okay, I'd like to talk about your surgery now. If you'd life, please take a minute to recall what that experience was like for you.

1. What were your thoughts/feelings/behaviour going into surgery? (E.g. nervous, anxious, scared)

Probe: What were the causes of these thoughts/feelings/behaviour?

2. What were your thoughts/feelings/behaviour coming out of surgery?

Probe: What were the causes of these thoughts/feelings/behaviors?

3. What impact, if any, has surgery left on you?

Probe: Has it had a lasting effect or do you not even think about it?

Section 5: Rehabilitation

Okay, good, now I'd like to talk about your rehabilitation process. If you'd like, please take a minute to recall what that experience was like for you.

1. **Can you talk me through your rehabilitation process?**

Probe: Where were you doing your rehab? (e.g. clinic, hospital, team facility)

Probe: What kinds of exercises were you doing?

Probe: Did you do exercises at home?

2. **How long did you rehabilitation process last?**

Probe: Was this how long you expected it to last? If not, was it shorter or longer? Why?

Probe: How did your rehabilitation change over time?

Probe: What were your feelings about being in rehab?

3. **What were the worst things about being injured?**

Probe: For example, some athletes are very frustrated that their mobility is limited, or they feel that no one understands them. Some athletes feel pressure from their coach or team; some become anxious about the future. Did you experience anything similar?

4. **What were the best things about being injured?**

Probe: For example, some athletes find that they have more time to spend with family and friends, they're removed from the stress of competition, or they take up new hobbies. Did you experience anything similar?

Section 6: Recovery Outcomes

1. **Can you describe your transition from rehabilitation to your return to sport?**

Probe: What were your feelings about returning to competition?

Probe: What did you find difficult about re-entering sport? Why?

Probe: What factors helped your re-entry into competitive sport? Why?

2. **Do you feel that there have been any negative changes as a result of your injury? If so, what are these changes?**

Probe: For example, constant pain, fear of re-injury, frustration that you're no longer playing at the same level as you were before…

Probe: What has caused these negative changes to happen?

Probe: How have these changes impacted you?

3. **Any other negative changes?**

Probe: What has caused these positive changes to happen?

Probe: How have these changes impacted you?

4. **Do you feel that there have been any positive changes as a result of your injury? If so, what are these changes?**

Probe: For example, closer to your family, feeling more relaxed, more flexible…

Probe: What has caused these positive changes to happen?

Probe: How have these changes impacted you?

5. **Any other positive changes?**

Probe: What has caused these positive changes to happen?

Probe: How have these changes impacted you?

Concluding

1. **What stands out the most to you about your injury experience?**

   Probe: Why?

2. **Is there anything else that you would like to tell me?**

3. **How do you feel about your injury now?**

4. **How do you feel the interview went?**

5. **Would you be ok with me interviewing again if necessary?**

Thank you!

Appendix E.

Participant Consent Form- Study 3

University of Roehampton London

ETHICS COMMITTEE

PARTICIPANT CONSENT FORM

Title of Research Project:

Brief Description of Research Project:

This research project is focused on exploring your expertise regarding sport injury, particularly how sport injury can serve as a platform for the development of growth. A series of questions will be asked to explore your work with injured athletes, receive your feedback on the theory of sport-injury related growth (SIRG), and gain your opinion on how to most effectively design and implement an intervention aimed at promoting growth.

Upon agreeing to participate in this study, you will take part in an interview which is expected to last between 45-90 minutes. This interview will be recorded and typed out word for word. Information that you tell me during this interview may appear in my written report and future publications. The recordings may be heard by my supervisors and any others who will be involved in examining the study. To ensure your privacy and anonymity, your names will be changed and pseudonyms will be used instead.

All information given will be treated with confidentiality, but there is a limit to this: if you disclose a risk of serious harm then I may need to direct you to somebody who can help (i.e., The Samaritans, www.samaritans.org, 08457 90 90 90). All data collected will be stored in password protected computer files and will only be accessible to the applicant (duration 10 years) to ensure that the confidentiality is adhered to. The data will only be stored for as long as it needs to be. Data will be kept for no longer than 10 years, it will then be removed and destroyed. All contact details or any details to identify you will be held in a separate folder from the tape recordings and transcripts to ensure complete confidentiality. No information that will identify you will appear within the written report or any further publications. Approval of the information provided to the investigator will be granted by you before any information is published.

Should you wish to withdraw from the study, please contact Kylie Roy-Davis and then the data will be subsequently removed from the files.

Investigator Contact Details:

Kylie Roy
Department of Life Sciences

Whitelands College
Holybourne Aveune
SW15 4JD
Royk@roehampton.ac.uk
0785 713 7175

Consent Statement:

I agree to take part in this research, and am aware that I am free to withdraw at any point. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

Name …….

Signature ……

Date ……

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Director of Studies Contact Details:

Dr. Ceri Diss
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU
c.diss@roehampton.ac.uk
+44 (0)20 392 3535

Head of Department Contact Details:

Dr. Caroline Ross
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU
C.ross@roehampton.ac.uk
+44 (0)20 8392 3529

Appendix F.

Participant Debrief Form- Study 3

University of Roehampton
London

ETHICS COMMITTEE

PARTICIPANT DEBRIEF FORM

Title of Research Project: A grounded theory approach to the sport injury experience

Thank you very much for taking part in our study, we greatly appreciate your contribution. This study was designed to learn from your experiences of working with sport psychologists, obtain feedback regarding my theory on SIRG, and gain your advice on designing an intervention aimed at promoting growth.

All data gathered during this study will be held securely and anonymously. If you wish to withdraw from the study, contact us and your information will be deleted from our files. All contact details or any details to identify you will be held in a separate folder from the tape recordings and transcripts to ensure complete confidentiality. No information that identifies you will appear within the written report or any further publications.

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator. However, if you would like to contact an independent party please contact the Head of Department (or if the researcher is a student you can also contact the Director of Studies.)

Investigator Contact Details:
Kylie Roy
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU

Email: royk@roehampton.ac.uk
+44 (0)795 713 7175

Head of Department:
Dr. Caroline Ross
Department of Life Sciences
University of Roehampton
Roehampton Lane
SW15 5PU

Email: C.ross@roehampton.ac.uk
+44 (0)20 8392 3529

Director of Studies Details:

Dr. Ceri Diss
Department of Life Sciences

Co-Supervisor's Details:

Dr Ross Wadey
Department of Life Sciences

University of Roehampton
Whitelands College
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London SW15 4JD

C.Diss@roehampton.ac.uk
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If you are feeling troubled or worried about any aspect of the study, or issues it may have raised, you may find it helpful to contact one of the following who will be able to advise you on agencies that can deal with your particular concern:

Samaritans
Website: www.samaritans.org
Tel: 08457 90 90 90

Appendix G.

Interview Guide- Study 3

Study 3 Interview Guide

Section 1: Introduction

Not recorded

Firstly, thank you for agreeing to take part in this study. My name is Kylie Roy-Davis and I am currently undertaking my Ph.D. at the University of Roehampton (UR). The aim of this interview is to gain an in-depth understanding of issues related to promoting growth for injured athletes. Please do not be concerned if this is somewhat confusing, the questions in the interview will help you recall this information. The information you provide will be used in my Ph.D. thesis and may also be published in scientific journals so that other athletes, coaches, and sporting personnel may benefit from your experiences. All your responses will remain anonymous and any information you provide will be stored in a secure area that is only accessible to me and my supervisory team. To ensure a complete and accurate account of this interview, I will be using a tape recorder.

Before starting the interview I would like to confirm your rights as a participant. This interview is about your experiences and expertise and as such if you feel uncomfortable answering any questions then you are free to decline to comment or ask for the interview to be stopped. I would rather you declined to comment rather than answer in a way that you think I or someone else would want you to. Please take your time when responding to questions during the interview, however, if you cannot recall let me know and do not guess. There are no right or wrong answers to any of the questions. If you have any questions yourself please feel free to ask them

at any point, especially if I ask something that is not clear. Finally, please remember that I am interested in gaining an overall understanding of how to most effectively promote growth for injured athletes; therefore, please do not hesitate to include anything that you believe has an impact on the development of growth following sport injury, such as personal relationships, individual differences, and so forth. Okay, before we begin, do you have any questions?

Section 2: Sport Psychology Background

Begin Recording

Okay, to begin I'd like to gain an understanding of your background as a sport psychologist as well as your work with injured athletes.

1. **How did you get involved in sport psychology?**
2. **What percentage of your consultancy involves working with injured athletes?**

Section 2: Sport Injury Experiences and Growth

Okay, great, now let's move on to promoting growth. I'd like to ask you questions regarding your experiences and recommendations for promoting growth. Again, if my questions are unclear please let me know and we'll move on.

1. **What are some typically challenges you've experienced working with injured athletes?**

    Probe: How do you overcome these challenges?

2. **Throughout your consultancy experience have you directly or indirectly witnessed injured athletes coming back stronger (either physically, psychologically, or socially) than they were before their injury?**

    Probe: What were the causes for these improvements?

    Probe: How can similar results be encouraged for other athletes after they have sustained an injury?

3. **In your opinion, have you perceived the injured athletes you've worked with to experience sport injury related growth?**

    Probe: Can you give examples?

4. **Were there any factors that you can identify that have promoted sport injury related growth?**

    Probe: Why do you think this helped assist growth?

5. **Were there any factors that you can identify that may have hindered growth?**

    Probe: Why do you think this prohibited growth?

6. **Do you foresee any issues with growth being a recommended recovery outcome?**

    Probe: Do you have any recommendations on how to overcome these issues?

Concluding

1. **Is there anything else that you would like to tell me?**
2. **How do you feel the interview went?**

3. **Would you be ok with me interviewing again if necessary?**

Thank you!