

Chapter 31

Rehabilitation from Sport Injury: A Social Support Perspective

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Chapter Overview

This chapter focuses on an increasingly pervasive topic within the psychology of sport injury literature, that of social support. In the chapter, we examine the existing research literature as it relates to specific conceptualisations of social support, consider key factors that influence the effectiveness of social support, and highlight developments that have contributed to some advances in our understanding that can inform the application of social support. We also address some of the methodological challenges associated with research in the field, highlighting some of the shortcomings of the sport injury literature to date. We conclude this chapter with some of the most important applied implications for injured athletes' support providers and future research directions to address the conceptual and methodological limitations that permeate the empirical research.

Introduction

Despite the undoubted benefits of sport and physical activity, one of the inherent risks that all athletes face, regardless of their competitive level, is injury. Sports injuries, which can range in severity from relatively minor to severe injuries requiring surgical intervention and extended rehabilitation periods, represent a challenging and stressful experience for athletes that can, in extreme circumstances, affect their ongoing health, well-being and performance aspirations (Wadey et al., 2013). It is perhaps not surprising, therefore, that the prevalence of sports injuries and their potentially negative impact has prompted researchers to explore the effect of an array of psychosocial factors on athletes' responses to, and recovery from injury. Of these factors, social support has been identified as one of the most adaptive for the recovery process (see Brewer & Redmond, 2016).

Within the psychological response literature, the majority of research has been predicated upon the integrated model of response to sport injury (Wiese-Bjornstal et al., 1998). The integrated model of response suggests that pre-injury (personality, history of stressors, coping resources) and post-injury personal (e.g., demographic variables, injury type and severity, athletic identity) and situational factors (e.g., level of sports participation, social support network, accessibility to rehabilitation) influence the athlete's cognitive appraisal of injury—which in turn influences athletes' emotional (e.g., frustration, grief, relief) and behavioural responses (e.g., adherence to rehabilitation, use/disuse of social support network) to injury and recovery outcome. Within the integrated model, social support is conceptualised as both a situational factor that can influence athletes' cognitive appraisal of their injury, as well as a behavioural response to injury (e.g., use/disuse of social support network).

While the more complex mediating and/or moderating relationship between social support and other post-injury variables specified within the integrated model have yet to be examined, a growing body of empirical and professional practice research attests to social support being a significant coping resource (e.g., Johnston & Carroll, 1998), with high levels of social support associated with less psychological distress (Rees et al., 2010) and greater rehabilitation adherence (Duda et al., 1989). However, not all research has provided support for these beneficial effects, with some research suggesting that when the provision of social support is inappropriate or ineffective, it can have detrimental effects on athletes' rehabilitation and recovery (e.g., Abgarov et al., 2012). Such equivocal findings are not unique to the sport injury context, rather they highlight the complexity of social support as a multidimensional construct (Freeman, 2020).

In a seminal paper, Bianco and Eklund (2001) attempted to deconstruct some of the complexity of social support for those interested in conducting psychology of sport injury research. In it, the authors wrote "Social support theorists have claimed that much of the confusion surrounding social support stems from the complexity of the construct coupled with a lack of conceptually driven research" (p. 86). Unfortunately, 20 years on, despite a proliferation of psychology of sport injury research within the ensuing period, little has changed; few have heeded Bianco and Eklund's recommendations and confusion around social support in an injury context remains.

Within their review, Bianco and Eklund (2001) identified three major conceptual issues, namely the differences between (a) support activities and support messages, (b) perceived support and received support, and (c) support networks, support exchanges, and support appraisals.

Support Activities and Support Messages

The first consideration was the need to distinguish between explicit and observable aspects of social support activities (i.e., what people do to be supportive) and the implicit, unobservable social support messages (i.e., what is communicated indirectly through supportive acts). In essence, to maximise the benefits of social support, it is important to ascertain whether its effectiveness is contingent upon the type of support offered, or the message it implicitly communicates.

Perceived Support and Received Support

Recognising the dimensions that comprise social support are interrelated, Bianco and Eklund (2001) advocated the need to (a) distinguish between perceived and received support when examining the mechanisms (main or stress-buffering effects) through which social support affects health outcomes, (b) simultaneously examine perceived and received support to determine which factor is more influential in the injury rehabilitation environment, and (c) ensure construct clarity in relation to perceived support, to ensure this overarching term is not used inappropriately to refer to both a recipient's perception of social support exchanges (i.e., the perception of support received) and to the perception of support availability.

Support Networks, Support Exchanges, Support Appraisals

Finally, Bianco and Eklund (2001) called for an examination of conditions that facilitate or hinder support exchanges, including the provider's ability to recognise and support the athlete's needs, the athlete's ability to communicate the need for support, and the importance of key sociocultural (e.g., culture of risk), personality (e.g., optimism), and interpersonal factors (e.g., level of intimacy) as moderators that foster or discourage support-seeking behaviours. Further, they suggested researchers should seek to identify factors influencing an athlete's support appraisals given that it is athletes' perception of support rather than the actual support they receive that has the strongest relationship with health outcomes.

Against this backdrop, we review the social support research that has been conducted within the psychology of sport injury over the last 20 years, with a specific emphasis upon six key areas that we consider to be of most significance to researchers and practitioners with a vested interest in supporting athletes' recovery following sport injury. Specifically, we focus on (a) perceived and received support, (b) support types, (c) support providers, (d) perspectives of the provider, (e) temporal aspects of social support, and (f) the multidimensional measurement of social support. Within each of these, we critically examine the social support and sport injury literature to illustrate the challenges, but also the limitations of the research; discuss, where appropriate, the conceptual developments within the social support literature more broadly (e.g., structural and functional aspects of support); and, address the methodological intricacies associated with these facets. We conclude this chapter with some of the most important applied implications for injured athletes' support providers and future research directions to address the conceptual and methodological limitations that permeate the empirical research.

What is this Thing Called Social Support?

Researchers have used a variety of terms to describe social support with definitions focusing on the quantity and quality of social relationships, support exchanges, and the perception that one is cared for and valued (Freeman, 2020). These frequently different conceptualisations, however, largely acknowledge that social support is a multifaceted construct that broadly encompasses structural and functional aspects (e.g., Gottlieb & Bergen, 2010; Lakey, 2010). The structural aspects refer to the number and range of different types of relationships individuals engage in or the extent to which they belong to different groups (Brisette et al., 2000). For example, physiotherapists, athletic trainers, coaches, team(mates), family, and friends are important relationships within injured athletes' support network. Functional aspects refer to the particular functions served by these social relationships and are separated into perceived and received (also known as enacted) support. Perceived support is one's potential access to support and reflects an individual's subjective judgment that support would be available when needed (Uchino, 2009; Wills & Shinar, 2000). Received support, on the other hand, refers to the exchange of individuals' specific helping actions (Lakey, 2010; Tardy, 1985). These can be

provided—through the provision of support, or the observed actions individuals perform to help an injured athlete (Burleson & MacGeorge, 2002; Cohen et al., 2005; Tardy, 1985)—or *received*—the reported receipt of the amount of support during a specific time frame (Uchino, 2009). For more discussion on social support, see Chapter 10 (Wilson, 2021).

Perceived and Received Support

In order to examine the effects of perceived and received support, it is important to understand the mechanisms through which they exert their effects, and which of these functional aspects of support is potentially more influential in the recovery process. Two principle mechanisms have been proposed to explain the impact of social support on health, namely the main effect and buffering effects models (for a review, see Bianco & Eklund, 2001; Cohen & Wills, 1985). The main effects model suggests that social support has a beneficial effect on psychological responses, irrespective of the levels of stressors experienced (Cohen & Wills, 1985). This means that high levels of social support lead to favourable outcomes regardless of how much stress injured athletes' experience.

In contrast, the buffering effects model suggests that social support moderates the relationship between stress and outcomes, such that at low levels of support, stress is negatively related to outcomes, but at high levels of support, stress is unrelated to outcomes. Here, social support may intervene at specific points from encountering a stressor, through the experience of a stress response, to the eventual outcome, such as the psychological responses to sport injury (Cohen & Willis, 1985).

Despite calls from Bianco and Eklund (2001) to examine both perceived and received support simultaneously to explore their reciprocal effects, no studies to date have done this. The closest study to doing this was Mitchell et al. (2014), which examined the main and stress-buffering effects of both perceived (Study 1) and received (Study 2) social support. Their findings showed that perceived support operated as a main- and stress-buffering effect. That is, higher levels of perceived support were linked with lower levels of restlessness, isolation, and feeling cheated. In addition, the perception of available support was associated with significant stress-buffering effects in relation to restlessness, isolation and feeling cheated. Received social support also had a positive influence on these psychological responses to injury but operated only as a main effect as opposed to a stress buffer. Overall, the perception of available support was more consistently linked to positive outcomes than received support.

Other research that has focused upon the perception of available support in isolation has mainly observed positive relationships between perceived social support and post-injury responses. For example, perceived support has been associated with main effects for devastation and dispiritedness in high-performance athletes (Rees et al., 2010). For low-performance athletes, perceived support also reduced the detrimental relationships between stressors (i.e., incapacitation, slowness of progress) and devastation, dispiritedness, and reorganisation (stress-buffering effects; Rees et al., 2010). Further, increased satisfaction with perceived available support has been associated with lower levels of mood disturbance (Green & Weinberg, 2001), and increased rehabilitation adherence (Johnston & Carroll, 2000).

For received support, results have been more mixed. Studies have found that athletes who reported higher levels of satisfaction with support received were less likely to experience symptoms of depression and anxiety when they returned to play (Covassin et al., 2014; Yang et al., 2014). Further, Udry (1997) found that satisfaction with received support did not predict rehabilitation adherence. In addition, the amount of received support has been linked with beneficial outcomes such as rehabilitation adherence (Duda et al., 1989), and an increased use of performance sources to restore confidence (Magyar & Duda, 2000), while other studies have reported mixed effects of received support depending on the function provided (e.g., Levy et al., 2008), or the personality of the injured athlete (Lu & Hsu, 2013). In addition, injured athletes have noted that, at times, support attempts can be unhelpful

when the support provided is unwanted, insensitive, mismatched, undermining, or of poor quality (Abgarov et al., 2012; Bianco, 2001; Johnston & Carroll, 1998; Udry et al., 1997). This begs the question, why are the findings equivocal for received and not for perceived support? The effectiveness of social support, and particularly received support, is assumed to be contingent upon several factors, namely the support type, the support provider, the timing of support, and crucially, the extent to which the support provided meets athletes' specific needs (Bianco, 2001; Bolger & Amarel, 2007).

According to the optimal matching model (Cutrona & Russell, 1990), social support is most effective in reducing the effects of stressful events when the support matches the demands created by them. This suggests that the differing demands athletes face throughout the injury process might require specific supportive functions. A central feature of optimal matching is that of controllability. When a stressor is viewed as controllable it will likely foster problem-focused coping efforts (e.g., seeking informational/tangible support) to manage it. In contrast, when viewed as uncontrollable, the stressor will likely evoke emotion-focused coping (e.g., seeking emotional support) on the part of the injured athlete (Uchino, 2004). Such a distinction can be particularly important in an injury context when different athletes may appraise stressors such as "slowness of progress" differently. For example, injured athletes who receive different pre-surgery advice (i.e., informational support) might appraise their support needs very differently. As a result, one who views the situation as controllable might seek tangible assistance (i.e., problem-focused coping) with everyday tasks. The other athlete, who appraises the situation as uncontrollable, might struggle to come to terms with the aftermath of the surgery, employ avoidance or emotion-focused coping strategies to offset intense and aversive emotional responses, and might benefit more from emotional support to facilitate recovery. Therefore, it is important to distinguish between different types of support when studying the effectiveness of perceived and received support.

Support Types

Interpersonal relationships may serve distinct functions (e.g., provide advice, encouragement, and a listening ear), functions that are widely accepted in the social support literature to comprise different "types" or "dimensions" (terms we use in this chapter interchangeably). Although there is debate as to how many dimensions exist, the injury literature has favoured drawing on two multidimensional models (e.g., Bianco, 2001; Rees et al., 2010).

The first model (Table 31.1) distinguishes between eight dimensions of support: listening support, emotional support, emotional challenge, reality confirmation, task appreciation, task challenge, tangible and personal assistance, which reflect three broad support categories of emotional, informational, and tangible support (Hardy & Crace, 1993; Richman et al., 1993). While some have questioned the content and structural validity of these eight dimensions (Rees et al., 2000; Rees et al., 2007), to date, the majority of the empirical research examining the role of social support in an injury context has tended to align with this eight dimensional model (e.g., Abgarov et al., 2012; Johnston & Carroll, 2000) or a subset of these (e.g., four dimensions: Levy et al., 2008; six dimensions: Robbins & Rosenfeld, 2001). These studies have provided some evidence for the optimal matching model. That is, Levy et al. (2008) found that task appreciation from the physiotherapist and emotional support from friends positively predicted clinic and home rehabilitation adherence, while personal assistance from family did not. Instead personal assistance predicted attendance at rehabilitation sessions.

The alternative multidimensional model (Table 31.1) which has been adopted by injury researchers comprises four dimensions: emotional support, esteem support, informational support, and tangible support (Cutrona & Russell, 1990). For example, Rees and Hardy (2000) distinguished between the four dimensions of support to reflect the social support resources of high-level sports performers and the functions served by those resources in relation to, for example, helping athletes deal with their

injuries. Furthermore, Mitchell and colleagues (2014) examined the different effects of these four types of support on psychological responses to injury. By carefully matching specific social support types (i.e., esteem support) with injury stressors (i.e., loss of confidence), they tested the main- and stress-buffering effects of perceived and received support. Interestingly, they observed different buffering effects for perceived esteem, emotional, and tangible support. While esteem support buffered the negative effects of lower levels of confidence and increased incapacitation on feelings of restlessness, isolation, and feeling cheated, emotional support only buffered the effects of incapacitation on isolation. Tangible support did not have any buffering effects. Besides showing the different effects of support types on outcomes of interest, these findings also provide some support for the optimal matching model.

Regardless of which model is utilised, a multidimensional approach to examining the functional aspects of support allows researchers to examine the effects of different dimensions of support at different stages of the recovery process; which has important implications for individuals working with injured athletes. Indeed, the predominantly qualitative research has provided clear situational and temporal variations in both the types of support injured athletes need and who in their provider support network is best placed to meet these needs across the three different phases of the injury rehabilitation process, namely onset, rehabilitation, and return-to-sport.



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Table 31.1
Two Multidimensional Models of Social Support

Models	Social support dimensions	Description: Refers to...
Richman, Rosenfeld, & Hardy (1993) – eight dimensions of social support reflecting three broad categories.	<i>Emotional support</i>	
	Listening support	listening to you without giving advice or being judgmental.
	Emotional support	providing comfort and indicating to you that they are on your side and care for you.
	Emotional challenge	challenging you to evaluate your attitudes, values, and feelings.
	<i>Informational support</i>	
	Reality confirmation	those who are similar to you and see things the way you do, helping to confirm your perspectives of the world and helping you keep things in focus.
	Task appreciation	acknowledging your efforts and expressing appreciation for the work you do.
	Task challenge	challenging your way of thinking about your work or an activity in order to stretch, motivate, and lead you to greater creativity, excitement, and involvement.
	<i>Tangible support</i>	
	Tangible assistance	providing you with financial assistance, products, and/or gifts.
	Personal assistance	providing you with services or help such as running an errand for you or driving you somewhere.
Cutrona & Russell (1990) – four dimensions of social support	Emotional support	being there for comfort and security, leading the person to feeling loved and cared for bolstering a person's sense of competence or self-esteem
	Esteem support	providing advice or guidance
	Informational support	providing concrete instrumental assistance (e.g., financial assistance, physical help with tasks)
	Tangible support	

Onset

At the onset of injury, athletes often exhibit frustration, depression, and decreased self-esteem due to incapacitation and a loss of independence following their injury (Evans et al., 2012). At this time the receipt of practical assistance can help offset the disruption to normal day-to-day functioning, while the shared social reality of discussing experiences with coaches and teammates also appears to have beneficial effects (Bianco, 2001). Perhaps of greater importance, however, is the provision of listening and emotional support mainly from close personal relationships to offset the intensity of athletes' emotional responses and sense of loss.

Rehabilitation

During the rehabilitation phase, athletes often experience apathy and a lack of motivation due to a perceived slowness of progress, setbacks, and/or the monotony of rehabilitation exercises (Evans et al., 2000). In such circumstances, quality informational support and guidance from medical professionals with the prerequisite expertise can bolster athletes' confidence (Magyar & Duda, 2000), facilitate a better understanding of the injury and associated rehabilitation process (Carson & Polman, 2008; 2017), and increase adherence to both clinic and home-based rehabilitation programmes (Levy et al., 2008).

Return-to-Sport

Finally, during return-to-sport athletes commonly experience re-injury anxiety and a loss of confidence as a result of internal/external pressures to compete and the risk of re-injury (e.g., Clement et al., 2015; Johnston & Carroll, 1998). At this time, physiotherapists play a crucial role as the preferred and actual provider of informational support to help ensure realistic targets and offset any re-injury fears, while athletes who feel wanted, needed and valued (akin to esteem support) by their coach are reported to have increased perceptions of psychological readiness-to-return (Podlog et al., 2015).

Support Providers

The research describing injured athletes' experiences with various source providers has also highlighted how the salience of their role may change at each phase of the rehabilitation process. For instance, Clement and Shannon (2011) examined injured athletes' perceptions of the availability, satisfaction, and contribution of social support across three sources: athletic trainers, coaches and teammates. Their findings suggested that athletes were significantly more satisfied with the social support provided by athletic trainers, the availability of that social support, and its contribution to their overall well-being than with social support received from coaches and teammates. Eight collegiate level athletes in Clement et al.'s (2015) study highlighted seeking social support as the most consistent behavioural response throughout recovery. Initially, the primary source athletes sought support from was family members, teammates, coaches, and, to a lesser extent, athletic trainers, to counteract their negative emotional responses. As rehabilitation progressed, athletes continued to seek social support from significant others, however, the role of sports medicine professionals became more prominent. Coaches and teammates were also cited as vital sources demonstrating faith in the athlete's ability to return stronger and to relate to them with their own personal injury experiences. Further, Corbillon, Crossman and Jamieson (2008) demonstrated that although athletes did not perceive greater overall support from either coaches or teammates, athletes were significantly more satisfied with the task challenge support provided by coaches and the emotional support provided by teammates.

Nevertheless, athletes have shared mixed experiences with social support from key providers. Abgarov et al. (2012) heeded Bianco and Eklund's (2001) call to explore social support networks, exchanges and appraisals with 12 Canadian university swimmers. Findings suggested a concerning lack of support from both coaches and teammates. Specifically, coaches were highlighted as resistant to

acknowledging injuries, with athletes feeling pressured to continue training and competing or risk being pushed aside and undervalued. In a similar vein, injury negatively influenced relationships with teammates due to their mistrust about the severity of injury and failure to act in an empathetic manner. Furthermore, athletes cited receiving conflicting advice and recommendations from medical professionals and coaches, reinforcing the notion that supportive acts may unintentionally be unhelpful. Conversely, athletes reported more favourable experiences of emotional support from coaches, teammates, parents and medical professionals, which facilitated their recovery. Informational support from other injured peers was also observed to be a positive resource, as was the knowledge and expertise from medical professionals, which was beneficial to rehabilitation. The provision of social support was also found to have a varied influence on the rehabilitation adherence of six recreational athletes (Levy et al., 2009). Findings showed that participants perceived social support to be most effective when associated with certain providers. Physiotherapists were cited as a prominent source of informational support due to their expert guidance and frequent feedback, whereas emotional, material, and practical support were perceived as effective when provided by family and friends. However, participants also suggested that overprovision of support from family members caused frustration and questioned the sincerity of physiotherapists as their support needs diminished during the mid and latter stages of rehabilitation. That said, the absence of a physiotherapist to communicate with during home-based rehabilitation hindered the motivation and confidence to complete exercises.

Perspectives of the Provider

Perhaps unsurprisingly, most of the social support and sport injury research has focused on obtaining an injured athlete's perceptions of their overall support network and/or specific support provider relationships (e.g., Clement & Shannon, 2011). However, an important area that has received very limited research attention is the perspectives of different support providers (i.e., significant others' perspectives of social support in an injury context; Freeman, 2020). Such an omission in the literature is particularly surprising given that providers (e.g., physiotherapists) and recipients (injured athlete) often differ in their perceptions of the support that is or isn't provided (Bianco & Eklund, 2001). The small number of studies which have looked at support providers' perspectives have focused on physiotherapists and coaches. Physiotherapists in Niven's (2007) study suggested having good support structures, adequate time and resources to complete exercises, and developing trust and understanding in the physiotherapist and prescribed exercise regimen were key to facilitating high levels of rehabilitation adherence. Ninedek and Kolt (2000) also highlighted the importance of physiotherapists communicating well with the athlete, providing a realistic timeline to full recovery and ensuring that the athlete understood the rehabilitation programme as effective strategies for facilitating successful rehabilitation.

Aside from sports medicine professionals, coaches are also considered an important source of social support for injured athletes. Indeed, Podlog and Dionigi (2010) found that coaches recognise that the provision of social support can play a pivotal role in addressing the psychosocial challenges that athletes typically experience during their return-to-sport. Specifically, maintaining an athlete's group involvement was suggested to fulfil various functions, including ensuring compliance with rehabilitation and maintaining motivation, and fostering a sense of identity, belonging, and the perception that the coach cared about their well-being. In an earlier study, Podlog and Eklund (2007) examined 14 professional coaches' perspectives on their role in assisting athletes returning to sport following a serious injury. Coaches demonstrated that they possessed a good understanding of their role in ensuring returning athletes' support needs are met through the provision of different types of social support. For example, emotional support involved simply listening to athlete concerns, managing any unrealistic expectations, and providing positive encouragement and reassurance following a poor performance or

rehabilitation setback. The provision of informational support aimed to maximise feedback regarding all facets of performance, including biomechanical analyses, fitness testing, and video analysis to provide a better understanding of the athlete's current status. To help athletes build confidence, strategies included the use of goal setting, arranging meetings with sport psychology consultants, and matches against lower calibre opposition.

Ultimately however, sports medicine professionals and coaches represent just two of the potential support providers within an injured athlete's social support network. Given the paucity of research that has examined the other support providers perspectives, such as teammates or significant others (e.g., family and friends), to maximise the effectiveness of social support throughout the rehabilitation process a more holistic approach that includes the viewpoint of different support providers should be considered a research priority.

Temporal Aspects of Social Support

Research that has employed a temporal dimension has predominantly comprised retrospective qualitative studies (e.g., Abgarov et al., 2012; Arvinen-Barrow et al., 2017) and cross-sectional (i.e., one-time observations) quantitative studies (e.g., Bone & Fry, 2006; Corbillon et al., 2008; Levy et al., 2008). Retrospective accounts have enabled researchers to examine athletes' perceptions of and experiences with social support across the whole rehabilitation period, including initial support needs at onset, throughout rehabilitation and return-to-sport. These studies have provided important insights into key support providers within an athlete's support network, including coaches, teammates, and sports medicine providers (e.g., Arvinen-Barrow et al., 2017; Bianco, 2001; Johnson & Carroll, 1998). Notwithstanding these insights, there is an inherent limitation with capturing perceptions of the availability of and satisfaction with support based upon past-injury experiences (the time frame elapsed since injury has been beyond three years in some cases) and/or following a successful return to competition (e.g., Corbillon et al., 2008; Covassin et al., 2014). Specifically, such perceptions about actual support exchanges are undoubtedly confounded by athletes' current recovery status. A more rigorous approach would involve repeated assessments of the constructs of interest concurrently across the different phases of the injury process.

Unfortunately, the literature is characterised by a limited number of repeated-measures studies, which has precluded our ability to examine the "inter-related, cyclic, spiralling, dynamic, and recursive" nature of psychosocial factors, like social support, and how it affects athletes' responses to injury (Wiese-Bjornstal, 2010, p. 106). For example, many questions still remain as to whether the availability of perceived support (when conceptualised as a situational factor in Wiese-Bjornstal et al.'s integrated response model) influences an injured athlete's cognitive appraisal of and their ability to cope with the injury, and how this in turn influences the use/disuse of social support (a behavioural response), or whether athletes' amount of and satisfaction with received support influences ongoing perceptions of support or future support-seeking behaviours. Instead, the repeated-measures studies conducted to date have focused on one facet of social support, namely perceived satisfaction. For example, Udry (1997) found no significant differences in injured athletes' perceived satisfaction with support throughout the first 12 weeks following knee surgery when assessed as a composite score. However, when assessed multidimensionally (i.e., informational, emotional, and practical support separately as opposed to a total social support score), injured athletes reported higher levels of satisfaction with informational and emotional support in the middle and end of rehabilitation, which most likely reflected successful recovery and decreased negative affect, as well as reduced demand for support. There are significant advantages in adopting repeated-measures designs, and in particular, designs which encompass the entire recovery period like that of Johnson and Carroll (2000). However, such designs

also raise important considerations regarding the sample composition and capturing the various phases of injury recovery.

Within sport injury research there is often a trade-off between sample size and composition (Wadey et al., 2014). In order to increase the size of their sample to sufficiently power¹ the statistical analysis (for a discussion of power in relation to sample size, see Button et al., 2013; Schweizer & Furley, 2016) and (presumably) provide findings that can be generalised across injuries, researchers often incorporate a variety of injuries which differ in severity and therefore the length of the recovery process. Indeed, social support and injury researchers have generally favoured heterogeneous samples in relation to injury type (e.g., Bone & Fry, 2006; Clement & Shannon, 2011; Mitchell et al., 2014), with definitions of injury severity ranging from a minimum period of absence from participation of one day (e.g., Hardy et al., 1991; Yang et al., 2014) to six weeks (e.g., Clement et al., 2015; Green & Weinberg, 2001). Other studies have used rating scales to categorise participants' injuries as low to high (e.g., Johnston & Carroll, 1998) or mild to severe (e.g., Lu & Hsu, 2013; Robbins & Rosenfeld, 2001). Irrespective of the classification approach, heterogeneous samples can be problematic when trying to discern the relative contribution of different types of support at different phases in the recovery process. For example, the provision of social support for lengthy injuries such as a rupture to the anterior cruciate ligament (which often requires reconstructive surgery and adherence to rehabilitation for six months or more) will be very different compared to athletes who sustain an ankle sprain that keeps them out of training and competition for a matter of days or weeks. Further, athletes with serious injury are more likely to seek social support (Green & Weinberg, 2001), and so combining injuries of differing severity may in fact mask important differences and contribute to some of the equivocal findings we see currently.

Multidimensional Measurement of Social Support

A number of measures, predominantly from social and health psychology, have been used to capture the multidimensionality of structural and functional dimensions of social support. What follows is a brief overview of the measures used in an injury context.

In its original form, the Social Support Questionnaire (SSQ: Sarason et al., 1983) assesses the perceived availability of support. It comprises 27 items asking questions such as "whom can you really count on to listen when you need to talk". For each question, participants first list the individuals they perceive as available for this, which provides a mean number of individuals for the 27 items. The second part asks participants to rate their degree of satisfaction with the support available to them (1 = *very satisfied* to 6 = *very dissatisfied*), giving a mean score for satisfaction. However, it is the shortened (six-item) version of this measure, which has good psychometric properties, that has been predominantly used in injury research (Sarason et al., 1987). For example, several studies have used this measure to identify the support providers (e.g., family, friend, coach, athletic trainer) central to the rehabilitation process and athletes' satisfaction with their "perceived support" (e.g., Covassin et al., 2014; Yang et al., 2010; Yang et al., 2014). While this measure would suggest an examination of perceived support availability in these studies, this was not always the case. For example, although Yang et al. (2010) defined social support as athletes' appraisal of the support that "might be available to them from their social network and how satisfied they were with that support" (p. 373) in line with the intended assessment of the measure, their results refer to *satisfaction with received support*. Other studies have

¹ Power refers to the ability of the test to correctly reject a false null hypothesis (i.e., not make a Type II error). Sufficiently powered studies increase the probability of detecting an effect (e.g., the contribution of social support to overall well-being; Clement & Shannon, 2011), if there is a 'true' effect to be uncovered. Power Calculations to estimate the required sample size of a study should be considered in the planning stage and can be facilitated by software packages such as NCSS PASS (Hintze, 2011).

used a modified version of the six-item SSQ to determine how the amount of “perceived support” influences athletes’ sources of self-confidence (Magyar & Duda, 2000) and rehabilitation adherence (Duda et al., 1989). As opposed to focusing on the satisfaction with the perceived availability of support, Duda and colleagues used this measure to assess the amount of support (supportiveness) provided at different stages of the rehabilitation process. As such, they appeared to use the measure (and the term “perceived support”) to reflect the *perception of received support*. Irrespective of how researchers have utilised the measure, the SSQ is a global measure of perceived support. As such, it does not provide subscores for any particular supportive functions nor does it distinguish between different sources of support.

A measure frequently used in the sport injury literature that does provide subscores for particular supportive functions is the Social Support Survey (SSS: Richman et al., 1993). The SSS focuses on eight dimensions of social support. Following the definition of each dimension, respondents indicate their perceptions of each type via four questions: (a) the number of support providers and relationship with each provider; (b) satisfaction with the quality of the support received; (c) the perceived difficulty in obtaining more of that support; and (d) the perceived importance of that support to one’s well-being. Richman et al. (1993) provided support for the content, structural, and concurrent validity of the measure. Several studies have used the SSS or adapted versions of the measure to gain an insight into the support network of injured athletes, the satisfaction with different support types received from specific providers, and the role of these support types in influencing factors important for successful rehabilitation (e.g., Clement & Shannon, 2011; Robbins & Rosenfeld, 2001). For example, Corbillon et al. (2008) used the SSS to evaluate the relative contribution of specific providers (coaches vs. teammates) in providing different types of social support to injured athletes. Levy et al. (2008) assessed specific types given by particular providers (e.g., task appreciation provided by the physiotherapist) and revealed that social support (a summed score of the latter three questions) predicted home-based and clinic rehabilitation adherence. Bone and Fry (2006) focused solely on athletic trainers to determine whether different types of support received predicted athletes’ rehabilitation beliefs. Using the same summed score, they found that task challenge was the only positive predictor of athletes’ susceptibility while tangible assistance uniquely predicted treatment efficacy. Despite its frequent use in an injury context, questions have been raised over the content and structural validity of the eight dimensions and the four questions across the eight dimensions (Rees et al., 2000). In particular, whether the eight factors are necessary given most conceptualisations of support distinguish just three of four dimensions is unclear (see Cutrona & Russell, 1990). Furthermore, in terms of the computation of scale scores and creating a summed score (such as in Levy et al., 2008), it is not clear whether some questions should be reverse scored. Therefore, some caution is warranted in using the SSS.

Despite the popularity of the two aforementioned measures, another relevant issue is that these measures were developed in social and health psychology. As a result, they may not necessarily capture the specific supportive functions that injured athletes need (Bianco & Eklund, 2001; Holt & Hoar, 2006). To address this shortcoming, Mitchell et al. (2005) developed the Social Support Inventory for Injured Athletes (SSIIA). The SSIIA is a 16-item self-report inventory that assesses the perceived availability of four support types consistent with those identified by Rees and Hardy (2000), namely emotional, esteem, informational, and tangible support. Findings from Rees et al. (2010) provided support for the four-factor structure of the measure, and demonstrated that the detrimental relationships between stressors and psychological responses (devastation, dispirited, reorganisation) were reduced for those with high social support compared to those with low social support. Mitchell et al. (2014) examined both perceived and received support by rewording the items in the perfect tense to reflect the different functions. For example, “To what extent do you have someone who gives you moral support when you’re feeling down” (perceived availability of social support) was changed to “To what

extent has someone given you moral support when you were feeling down" (received support). Importantly, and unlike the majority of studies within the social support and sport injury literature using modified measures, Mitchell et al. (2014) assessed the psychometric properties of the modified measure and provided support for its four-factor structure before undertaking their analyses.

Important Measurement Considerations

Consistent with a multidimensional approach to conceptualising functional social support (i.e., types of support), most quantitative studies have utilised one of the aforementioned social support measures to collect data on multiple dimensions (e.g., Levy et al., 2008; Lu & Hsu, 2013; Mitchell et al., 2014). In practice, however, some of these studies have then combined the dimensions into an aggregate score for support (in effect creating a unidimensional construct), often because the correlations between support dimensions are moderate to high (e.g., Rees et al., 2010). These high correlations may occur as a result of injured athletes often receiving multiple support types (Bianco, 2001) or injured athletes not distinguishing between different support types (Rees et al., 2010). Indeed, the high correlations might also indicate the existence of a single higher-order factor reflecting a global support construct which is further differentiated in specific dimensions of support. Though aggregate measures are useful in identifying the overall effect of support, they may limit the potential for researchers to detect differential effects of these specific support dimensions on outcomes of interest (e.g., the aggregate score might suggest social support is beneficial overall but obscure that a specific type is detrimental to recovery). Furthermore, aggregate measures may hinder examining theoretically relevant questions about the value of matching support types with phase-specific stressors (Cutrona & Russell, 1990; Evans et al., 2012) and/or the needs of the support recipient as perceived by the support provider (Rafaeli & Gleason, 2009). That said, even when researchers consider the separate support dimensions, their findings may reveal that these have no distinct predictive utility (in magnitude and direction) on outcomes of interest (Rees et al., 2010).

A broader consideration is to recognise how the findings of studies using different conceptualisations of social support and different measures may be interpreted and compared. One example is for researchers to be mindful of interpreting findings regarding "perceived support". While some researchers use the term "perceived" support to refer to the perception of support provided (e.g., Magyar & Duda, 2000), others use the same term to refer to the perception of support availability (Mitchell et al., 2014). Furthermore, some studies examine how satisfaction with perceived (or received) support is linked with outcomes of interest (e.g., Covassin et al., 2014), while others focus on the amount of perceived/received support (Lu & Hsu, 2013; Mitchell et al., 2014). Making inferences for best practice based on particular findings requires recognition of these differences. To illustrate, while high levels of satisfaction with a particular type of received support (task challenge [informational support], Bone & Fry, 2006) likely reflects that the amount of support given was congruent with the amount of quality support the injured athlete wanted, it does not necessarily mean that more of this type of support is better (Mitchell et al., 2014). Therefore, conceptual clarity (i.e., is the study examining perceived, received, or both functions), methodological coherence (e.g., the selection of appropriate measures, definitions), and precise interpretation of findings across the research is essential.

Implications for Support Providers

The aforementioned findings provide fairly compelling evidence that social support can help injured athletes cope with the various stressors encountered throughout the injury process, promote increased rehabilitation adherence, and facilitate a safe and timely return to sport. It is essential, then, that providers of social support within an injured athlete's network develop an understanding of how to best support the athlete, particularly with regard to the quantity and the appropriateness of the support

they make available and/or provide (Mitchell et al., 2014). With this in mind, we provide some recommendations for key providers in injured athletes' support network, including (a) medical professionals and athletic trainers, (b) coaches and teammates, (c) sport psychologists, and (d) significant others (e.g., family, friends, partners).

Medical Professionals and Athletic Trainers

After the initial occurrence of the injury, medical professionals (e.g., team doctors and surgeons) represent a vital source of informational support for the athlete (Johnston & Carroll, 1998). Communicating well with the athlete, providing realistic timelines to recovery, and ensuring that the athlete understands their treatment, and treatment options through informational support can increase perceptions of control at a time of great uncertainty and confusion (Chan et al., 2009; Evans et al., 2012). Although the main providers of emotional support are typically those with a high level of intimacy with the athlete, physiotherapists/athletic trainers are well placed, given the amount of time they will spend with the athlete, to help athletes regulate their emotions by listening to their concerns, offering emotional comfort by expressing empathy and encouragement, and helping the athletes rationalise their negative thoughts and feelings (e.g., Bianco, 2001; Johnston & Carroll, 1998).

During rehabilitation it is important that athletic trainers devise progressive exercises that ensure subjective and objective indicators of progress (informational support) and provide positive performance feedback (esteem support). This is especially important during the early phase of rehabilitation, as initial confidence judgments in the rehabilitation setting are the strongest determinants of confidence (Carson & Polman, 2017; Magyar & Duda, 2000), motivation (Johnston & Carroll, 1998), and perceptions regarding the effectiveness of the rehabilitation programme, all of which are associated with increased adherence to rehabilitation (Levy et al., 2008). Often this informational and technical support has taken the form of goal-setting (e.g., Evans et al., 2000), with process goals (e.g., focus on the execution of rehabilitation exercises) increasing focus, personal control and self-confidence, and performance goals, which include achieving specific standards (e.g., increased range of motion), enhancing athletes' motivation, self-confidence, and outcome-expectancy.

Coaches and Teammates

Coaches and teammates can have a significant impact on injured athletes' perceptions of the provision and availability of social support. Received support from coaching staff (e.g., a concerned remark or visit to the athletic training room) can make injured athletes feel more appreciated, and less isolated (Robbins & Rosenfeld, 2001). Indeed, some coaches have highlighted that maintaining athletes' involvement in the group helped to convey messages of concern for athletes' well-being and increased their sense of belonging and social identity (Podlog & Dionigi, 2010). However, coaches should also be aware that some athletes will need to withdraw from the sporting environment to reduce the real and perceived losses (e.g., status in the team, fitness levels, missed opportunities) they experience as a consequence of injury (Evans & Wadey, 2011). Therefore, through a process of shared understanding, coaches should discuss group involvement preferences with athletes. Upon a return to sport, coaches should safeguard a team-based approach with the physiotherapist, sport psychologist, and importantly, the athlete to ensure they are involved in the decision-making process. Ensuring direct feedback from the physiotherapist can alleviate concerns that the athlete is rushing their return-to-sport, while an individualised goal-setting programme that focuses on skill development and attaining physical benchmarks, as opposed to placing expectations on sporting performances, can promote a sense of autonomy and competence (Podlog & Dionigi, 2010).

Teammates, in particular those who have experienced injuries themselves, can provide invaluable support because they can relate to what the injured athlete is going through, and are more

likely to be perceived as relatable to. In this sense, they can become role models to provide teammates with positive examples of how to make a successful return-to-sport, reinforce the belief that such efforts could be replicated, and provide emotional and informational support about how to deal with injury-related challenges. However, it is also important to recognise that in some circumstances, vicarious information (i.e., observing teammates rehabilitate) may have a negative impact on the restoration of an athlete's confidence (Magyar & Duda, 2000). Therefore, coaches and athletic trainers need to be aware of which models would be most effective for the injured athlete, to avoid social comparison and the pressure to over-adhere (Niven, 2007). Irrespective of whether they have been previously injured or not, teammates should recognise they are an influential source of emotional, informational, tangible, and esteem support. Keeping in touch with their injured teammate by sending cards, text messages, or phone calls (received support) can have a lasting impact on the recipient's perception of available support upon a return to the team environment, and help to alleviate return-to-sport concerns (Udry et al., 1997; Podlog et al., 2015).

Sport Psychologists

Sport Psychologists (SPs) are well positioned to provide emotional support, especially for athletes that don't want to "burden" their teammates or significant others (Wadey & Evans, 2011). Through the use of listening support and emotional challenge, particularly when rehabilitation progress is slow, when setbacks are experienced, or when other life demands (e.g., family commitments) are placing additional pressures on the athlete, SPs can help athletes to rationalise the experience, come to terms with the implications of their injury, and maintain a positive attitude by reframing barriers to progress (Evans et al., 2000). SPs can also be an important source of informational support. For example, SPs can facilitate educational workshops that provide athletes with information regarding the different types of social support, work with the athlete to recognise who in their support network are best placed to provide these types of support, and discuss how this support can be mobilised. Doing so can not only increase an athlete's perception of available support, but also highlight any deficits in an athlete's support needs so that early intervention can take place. Further, SPs should encourage athletes to seek answers to questions they have about their injury and the rehabilitation process from individuals with the relevant expertise (e.g., physiotherapists) and experience (e.g., formerly injured teammates; Bianco, 2001; Carson & Polman, 2008; Johnston & Carroll, 1998). This is particularly important given injured athletes' ability to communicate effectively with rehabilitation personnel can affect their access to various forms of support and encouragement (Ninedek & Holt, 2000).

Significant Others (Family, Friends, Partners)

Family, friends, and partners represent the main sources of emotional (e.g., unconditional support, love, understanding) and tangible support (e.g., assistance with transport) that are essential to alleviate the stress associated with physical incapacitation, lack of mobility, and disruption to normal daily activities early after injury (e.g., Rees et al., 2010). Emotional support at this time can also help alleviate the perceptions of isolation athletes may encounter when, either through their own choice, or through the decisions of the coaching and medical staff, they are removed from the team environment. In such circumstances, significant others should be cognizant that this can diminish an injured athlete's support network, and thus exacerbate a sense of loss. It is important therefore that well-meaning network members recognise their support may not always be welcome at this time (Bianco, 2001). Indeed, too much support which can be construed as patronising and belittling may have an adverse effect by reducing self-esteem and making athletes dwell on the situation, leading to apathy and non-adherence (Johnston & Carroll, 1998; Niven, 2007).

Future Research Recommendations

Based upon our current understanding of the role of social support in the injury recovery process, and the insights this has (and has not) afforded us in supporting injured athletes, we highlight five important areas that warrant future research attention. First, although the qualitative research findings have been fairly consistent in identifying the role of specific types of support at specific stages during the recovery process, few quantitative studies have corroborated these findings. Thus, quantitative studies which account for the multidimensional nature of social support are needed to determine the unique effects of specific support types. This should include the simultaneous examination of perceived and received support and consider both the amount of functional support and the satisfaction (or perceived adequacy) of the support.

Second, it is imperative that researchers are explicit in stating who in the athlete's support network they are referring to when assessing the effects of functional aspects of social support. A criticism of the received support studies conducted to date is that some of them have predominantly used measures designed to assess support received from any number of members of an athlete's social network (e.g., significant others, coach, physiotherapist; Duda et al., 1989; Mitchell et al., 2014). Although the support an individual receives from their network is important, examining specific relationships within this network is necessary because the effects differ across individuals' specific relationships (Bianco, 2001; Johnston & Carroll, 1998; Levy et al., 2008). Without providing explicit instructions to differentiate between providers, researchers risk aggregating these effects which may confound the support types (e.g., emotional vs. tangible support) with the source of the support (e.g., whether the support is provided by an expert or close social tie), and thus limit our understanding of how different types of support function in specific types of relationships (the magnitude and direction of effect).

Third, future research should not only assess the functional aspects of support from the perspective of the recipient (i.e., the injured athlete), but also consider the perspective of the support provider(s). In doing so, we can begin to develop a better understanding of whether the exchange of support and perceived availability between members of an athlete's support network and the athlete is aligned. For example, using a critical incident approach (see Hanton et al., 2009), providers and recipients could reflect upon support exchanges following important incidents during the recovery process (e.g., when setbacks occur) to examine if there is congruence between what the provider "gives" and what the recipient interprets, and what impact this (mis)match can have on outcomes of interest.

Fourth, in order to reflect the dynamic and recursive nature of the injury process as it unfolds over time, future correlational studies should be prospective and longitudinal with repeated assessments of the different facets of social support. Doing so would not only allow us to examine the temporal aspects of support (e.g., fluctuations in types and providers), but also some of the more complex mediating relationships between social support, cognitive appraisals, and ongoing post-injury emotional and behavioural responses (e.g., adherence to rehabilitation).

Finally, Johnston and Carroll (1998) and Mitchell et al. (2014) called for future research to examine factors that moderate the success and effectiveness of support exchanges. While some investigations have examined the role of gender (e.g., Yang et al., 2010) and competitive level (e.g., Rees et al., 2010), there are a multitude of sociocultural and interpersonal factors that have yet to be examined. Personality variables, support seeking, support preferences, support expectancy, and relationship closeness (intimacy) are among a number of moderating factors that warrant further examination.

Learning Exercises

1. Why is it important to distinguish between perceived and received support?
2. Identify the different support types that have been discussed in the literature.
3. How might injured athletes' social support needs change across the different phases of rehabilitation and what are the reasons for these changes?
4. Discuss the relative merits of various social support providers in meeting injured athletes' needs during the different phases of injury.
5. What are the reasons for the provision of social support having detrimental effects?
6. What are the challenges that providers face in meeting injured athletes' social support needs?
7. Discuss the merits of utilising longitudinal designs to assess social support across the injury rehabilitation process.
8. Describe the advantages and disadvantages of adopting a unidimensional versus multidimensional approach to assessing social support.
9. Evaluate the advantages and disadvantages of assessing a homogenous sample relative to injury type.
10. Identify two types of support that injured athletes might benefit from during each of the three phases of rehabilitation and consider who might be best placed to deliver this support.
11. Provide two recommendations for each member of the injured athlete's support network (e.g., coach, teammates, parent) that could enhance the effectiveness of the provision of social support.

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