

Stressors experienced by injured athletes

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Abstract

The purpose of this study was twofold: (a) to examine the stressors experienced by injured athletes during three phases of their recovery from sport injury, and (b) to explore the differences in the stressors experienced by team as compared to individual-sport athletes. Participants comprised previously injured high-level rugby union players ($n = 5$) and golfers ($n = 5$). Semi-structured interviews were used to explore the stressors participants experienced during three phases of injury (onset, rehabilitation and return to competitive sport). Within- and cross-case analyses showed that athletes experienced sport, medical/physical, social and financial stressors. There were a number of differences in the stressors experienced across the three phases and between team and individual-sport athletes. Findings have important implications for the design and implementation of interventions aimed at managing the potentially stressful sport injury experience and facilitating injured athletes' return to competitive sport.

Keywords: *Injury, rehabilitation, adherence, rugby, golf*

Introduction

Over recent years a growing body of empirical research has attested to injury being a stressful experience that may challenge the resources of athletes (e.g., Podlog & Eklund, 2006; Tracey, 2003; Wadey & Evans, 2011). It is perhaps not surprising, therefore, that much of this research has been underpinned by stress-based models, in particular Wiese-Bjornstal, Smith, Shaffer, and Morrey's (1998) integrated model of response. Wiese-Bjornstal et al.'s (1998) model suggests that both pre- and post-injury factors and personal and situational variables influence athletes' emotional and behavioural responses to injury, mediated by a process of cognitive appraisal. Findings from this research, which has largely focused on athletes' emotional response to injury, suggest that shock, anxiety, anger, depression and feelings of helplessness are prevalent at injury onset, whereas frustration, relief, jealousy, guilt and apathy characterise athletes' responses during rehabilitation. Impatience, re-injury anxiety, excitement and fluctuating levels of confidence appear to replace these emotions during athletes' return to competitive sport (e.g., Evans & Hardy, 2002; Johnston & Carroll, 1998; Podlog & Eklund, 2006; Tracey, 2003). However, while this research has important implications for the design of inter-

ventions aimed at modifying injured athletes' psychological responses, it has largely overlooked the demands that bring about these responses. This notion is perhaps surprising given that the most effective approach to stress management is to carefully assess and address the specific stressors that give rise to responses (Fletcher, Hanton, & Mellalieu, 2006).

Although a few researchers have attempted to investigate the stressors that precede the aforementioned responses, these studies have frequently labelled injured athletes' cognitive and emotional responses as sources (i.e., stimuli) rather than consequences of the stress process (i.e., response). For example, Gould, Udry, Bridges, and Beck (1997) sought to identify, "stress sources ... to gain a greater understanding of the type of stressors that elite skiers face when attempting to return from a season-ending injury" (p. 366), suggesting a stimulus-based conceptualisation of stress. However, in their results they reported "feelings" and "doubts" (p. 369) under the rubric of, "sources of stress" (p. 369), suggesting a response-based conceptualisation of stress. Bianco, Malo, and Orlick (1999) reported reduced self-confidence and re-injury concerns as sources of stress; findings that were echoed by Evans and her colleagues (e.g., Evans & Hardy, 2002; Hare, Evans, & Callow, 2008). Recently, Podlog and

Eklund (2007a, 2007b) identified anxiety about unknowns, self-presentational concerns, and return-to-competition fears as stressors during return to competition.

This response-based approach, which has also occurred in the competition stress and anxiety literature (see Hanton, Neil, & Mellalieu, 2008), is not consistent with contemporary stress research (Fletcher et al., 2006, see also Fletcher & Scott, 2010; Mellalieu, Neil, Hanton, & Fletcher, 2009), which distinguishes conceptually between the events or properties of events (i.e., stressors) and responses to these events. As well as clouding sport psychologists' understanding of the stress process by potentially overlooking the initial demands that precede injured athletes' responses, one of the drawbacks of adopting such an approach is the corollary of the application of these findings. For example, if re-injury anxiety and reduced self-confidence are considered by a practitioner as 'sources of stress', the actual origin of the performer's re-injury anxiety and reduced self-confidence may be disregarded. Put simply, the intervention may be targeted at the emotional response as opposed to addressing the cause (i.e., the stressor itself). The adoption of conceptually accurate definitions is essential therefore, if we are to engage in meaningful research that is theoretically underpinned and which can inform professional practice. To this end, the present paper adopts Fletcher and colleagues' (2006) conceptualisation of the stress process wherein *stressors* refer to the, "environmental demands (i.e., stimuli) encountered by an individual" (p. 329).

Of the research that has explored the stressors experienced by injured athletes, some has embraced the concept of change, a concept which is central to models of stress such as that proposed by Wiese-Bjornstal et al. (1998). This research has supported the suggestion that the stressors experienced by injured athletes vary as a function of the different phases of the injury process, and the effects of individual and situational factors (Evans, Hardy, & Fleming, 2000; Johnston & Carroll, 1998). Bianco et al. (1999) examined the psychological processes associated with injury and illness among elite skiers ($n = 12$), and found their experiences spanned three distinct time phases: (a) the illness-injury phase, (b) the rehabilitation-recovery phase, and (c) the return to full activity phase. Each phase was distinguished by a series of events that caused varying levels of strain (i.e., negative psychological responses). Specifically, career demands, the inability to perform and the timing of injuries were reported as stressors during the initial injury-illness phase. Slow rehabilitation progress and setbacks were reported to be stressors in the rehabilitation-recovery phase. Finally,

physical fitness, re-injury and performance issues characterised the return to full activity phase. In an action research study with three injured rugby players, Evans et al. (2000) found injury severity, contractual and financial issues, child care, playing/performance aspirations, incapacitation and isolation, weight gain, rehabilitation progress (and setbacks), and identity loss to be demands associated with the early phase of rehabilitation. During the rehabilitation phase the stressors comprised rehabilitation setbacks, contractual issues, playing expectancy, and financial demands. Playing/performance aspirations and fitness status characterised the re-entry to competition phase. In subsequent studies, lack of support from coaches, inability to train, weight gain, slowness of progress, loss of physical fitness and lack of progress have been identified as stressors that can also be temporally defined (Evans & Hardy, 2002; Hare et al., 2008).

Although the aforementioned empirical research has shed some light on the stressors that injured athletes may experience, as a body of knowledge, and one that can guide interventions to help expedite the successful recovery of injured athletes it has a number of limitations: (a) the stressors associated with being injured have received limited focused research attention; (b) a number of studies appear to have labelled injured athletes' responses as sources rather than consequences of the stress process; (c) there has been limited regard for the personal and situational variables that influence athletes' injury experience (e.g., injury severity, performance standard, team versus individual sport); (d) only a few studies have delineated between the various phases of injury with much variability in the time-lines adopted; (e) a number of the studies have examined a similar population group (i.e., skiers; e.g., Bianco et al., 1999; Gould et al., 1997; Udry, Gould, Bridges, & Tuffey, 1997); and (f) athletes who have incurred illnesses as well as injuries have been included within study samples. In relation to the present study these limitations are salient not least because within an injury context stressors, which have been shown to vary as a function of personal and situational variables, have been shown to influence recovery outcomes (e.g., gender and level of sport participation; Bianco et al., 1999; Brewer, Linder, & Phelps, 1995; Evans et al., 2000).

The purpose of the present study, therefore, was to align to contemporary stress research in our conceptualisation of the stressors experienced by injured athletes, to explore these stressors within a temporal context, and to consider the effects of a situational variable that to date has received limited attention. Specifically, we examined in-depth stressors that a sample of male team (rugby union) and individual sport (golf) performers experienced across three

phases of injury: onset, rehabilitation, and return to competitive sport. We subsequently explored differences in the stressors experienced by team as compared to individual-sport athletes.

Method

Participants

Participants were a purposeful sample of 10 competitive performers from the sports of rugby union ($n = 5$) and golf ($n = 5$). To minimise the potential confounding effect of a number of situational and personal variables (e.g., injury severity, performance standard) and facilitate the comparison between team and individual-sport athletes, participants were required to meet a number of criteria: (a) participants must have incurred an injury during training or competition; (b) using sporting time-loss as a definition of injury severity (cf. Van Mechelen, 1997), the injury must have prevented participation in training and competition for a minimum of six weeks; and (c) to minimise memory decay, participants must have returned to competitive sport within an 18 month period prior to the study. All participants were male and ranged in age from 18 to 21 years (mean = 20.6, $s = 2.72$). Injury severity ranged from 8 to 32 weeks (mean = 15.8, $s = 8.56$). Table I contains an overview of participants' demographic information.

Interview guide

Semi-structured interviews were conducted using an interview guide designed to address the purpose of the study. The guide, based on an extensive review of the relevant literature, helped to ensure a consistent approach to interviewing was adopted across all participants, while allowing some flexibility in the ordering of questions to enhance its natural flow

(Patton, 2002). Probes were used to enhance the depth, clarity and meaning of responses (Patton, 2002).

Consistent with research that has explored athletes' responses to injury, the interview guide was structured around three phases of injury (injury onset, rehabilitation and return to competitive sport; e.g., Hare et al., 2008; Johnston & Carroll, 1998), and comprised four sections. The first section outlined the purpose of the study and contained demographic questions about participants' involvement in sport and injury experience. The three subsequent sections focused on the different phases of injury and explored the stressors participants experienced. Questions included: What demands did you experience from the time that the injury occurred to when you received your first physiotherapy appointment? Did the demands you experienced in the previous phase of your recovery change at all during your rehabilitation? Once developed, three researchers experienced in qualitative interviewing, injury and stress research scrutinised the guide with regard to content, structure, and the wording of questions. Feedback from two pilot interviews resulted in some minor revisions to the guide (Patton, 2002).

Procedure

Athletes who met the sampling criteria were identified, made aware of the purpose of the study, and invited to participate. All athletes ($n = 10$) agreed to participate and provided written informed consent. Prior to the interview and to facilitate the effectiveness of the interview process and enhance recall, participants were provided with an information sheet that outlined the purpose of the study and focus of the interview. All interviews were conducted at times and locations of participants' convenience. Six of the interviews were conducted at the participants'

Table I. Participant information.

Participant	Age (years)	Performance Level	Injury	Surgery Required	Injury Severity	Previous Injury History
1	20	Professional	Torn ankle ligaments	No	12 weeks	Fractured ankle and cheek bone
2	20	Semi-professional	Shoulder dislocation	Yes	24 weeks	Broken thumb
3	19	Semi-Professional	Shoulder dislocation	No	20 weeks	None
4	20	Professional	Torn hamstring	No	12 weeks	Knee cartilage, Hamstring tear, A-C dislocation (x2)
5	18	Semi-professional	Ruptured ACL	Yes	32 weeks	None
6	20	International	Pulled hamstring	No	8 weeks	Torn hamstring
7	20	County	Shoulder dislocation	No	24 weeks	Dislocated shoulder
8	21	County (3)	Broken hand	No	8 weeks	Broken arm
9	20	International	Shoulder ligament strain	No	8 weeks	Shoulder ligament, broken foot
10	20	International	Ligament strain lower back	No	10 weeks	Sciatica

Note: Participants 1–5 are team-sport athletes, 6–10 are individual-sport athletes.

training facilities, two in a private university study room, and two at participants' homes. At the beginning of the interview each participant was provided with the following definition of what constituted a stressor, "any demand that causes negative feelings and thoughts with respect to being injured". The implications of this definition were discussed until full understanding was deemed to have been reached. During each interview participants were asked to reflect on their injury experience and respond to questions about the stressors they encountered during that phase. Interviews lasted between 50 and 90 minutes (mean = 75), were recorded, transcribed verbatim and subsequently returned to participants for member checking (Patton, 2002). All participants confirmed the accuracy and adequacy of the information in the transcripts.

Data analysis

The three phases of injury within the interview guide provided the deductive framework for the inductive content analysis of the interview transcripts (Patton, 2002). The interview transcripts were read and re-read to ensure that the researchers became immersed in the data. For each participant, relevant quotations were identified and clustered into meaningful themes. This process, which is also referred to as pattern coding, formed the basis of the within-case analysis (Miles & Huberman, 1994). Using the within-case analyses, emergent themes from each case were subsequently extracted and compared across participants at the different phases of injury in a cross-case analysis. This process was repeated for the purpose of conducting an individual versus team sport comparison (Miles & Huberman, 1994).

A number of procedures were employed to enhance trustworthiness. Peer debriefing with an independent researcher experienced in qualitative methods and the focus of the study occurred during study design, data collection, analysis and report writing. Peer debriefing serves a number of functions, it keeps the enquirer 'honest'; provides an opportunity to test and refine working hypotheses; and helps clear the mind of feelings and emotions that cloud good judgement (Lincoln & Guba, 1985). Member checking and researcher triangulation helped protect against researcher bias and misinterpretation of data. All participants confirmed the adequacy and accuracy of their transcripts and full consensus was reached by researchers on the interpretation of the data. Finally, an expert audit review was conducted to reinforce the credibility of the data analyses and interpretation (Patton, 2002). The audit was undertaken by the same researcher who was involved in the peer review process.

Results and discussion

A combined results and discussion section follows that firstly considers the stressors experienced by the injured athletes and secondly the differences in the stressors experienced by individual and team-sport athletes. Each is structured according to the three phases of injury (onset, rehabilitation, and return to sport). Table II contains a summary of the findings.

Stressors experienced by injured athletes

The first purpose of the study was to examine the stressors that injured athletes experienced during three phases of injury: onset, rehabilitation, and return to competitive sport. The findings suggested that athletes experienced a number of different stressors, some of which were relatively stable across phases; however, the majority of which were not. The findings are discussed here in relation to each of the phases.

Onset of injury. Onset of injury accounted for the period between injury occurrence and the first physiotherapy appointment, and lasted between 1 and 4 weeks, with the exception of 8 weeks for one participant (5). Notably it was the phase associated with the highest number of injury-related stressors ($n = 16$). Four dimensions accounted for the stressors cited: *medical/physical demands*, *sport-related demands*, *social demands*, and *financial demands*. The first three dimensions will be discussed here. The final dimension only comprised two stressors (*inability to work* and *medical costs*), which were only identified by one participant.

a) Medical/physical demands. During the onset of injury the largest numbers of stressors were associated with medical/physical demands. *Incapacitation*, which reflected the inability to perform everyday tasks was cited by all participants and was the only stressor identified by all participants during all three phases. Participant 3's comments reflected those of others:

"because I had to wear a brace for a period of time just doing the things you take for granted everyday like pulling your socks on, putting your shoes on, getting tops over it [injured limb] with one hand it's so much harder than using two. Making food, making food with one hand's a nightmare because you can't cut anything, you can't do anything".

Gould et al. (1997) and Evans et al. (2000) also identified the physical inability to complete everyday activities as a stressor among injured skiers and rugby players.

Table II. Stressors experienced by injured athletes.

Stage of Injury Process	General Dimension	Stressor	Total N = 10	Team N = 5	Individual N = 5
Onset of injury	Medical/physical demands	Incapacitation	10	5	5
		Diagnosis	5	4	1
		Lack of knowledge of the injury/recovery process	3	1	2
		Inability to train / loss of fitness	2	1	1
		Delay in treatment	2	1	1
	Sport-related demands	Injury severity	1	1	—
		Missed opportunities	5	5	—
		Playing contracts	2	2	—
	Social demands	Loss of independence	7	5	2
		Social comparison	4	4	—
		Unwanted attention	2	1	1
		Loss of routine	2	1	1
	Financial demands	Isolation	1	1	—
		Boredom	1	1	—
		Inability to work	1	—	1
		Medical costs	1	—	1
Rehabilitation	Medical/physical demands	Lack of rehabilitation progress	7	5	2
		Medical team/treatment	4	3	1
		Loss of fitness	4	3	1
		Physical appearance	2	2	—
		Rehabilitation setbacks	2	2	—
	Sport-related demands	Weight loss	1	1	—
		Perform at pre-injury level	8	5	3
		Missed opportunities	5	3	2
		External pressure	3	2	1
	Social demands	Internal pressure	3	2	1
		Social comparison	4	4	—
	Financial demands	Isolation	4	—	4
		Cost of rehabilitation	2	—	2
Return to competitive sport	Medical/physical demands	Risk of re-injury	7	5	2
		Loss of fitness	6	5	1
		Rehabilitation setbacks	2	2	—
		Medical/recovery outcome	1	1	—
	Sport-related demands	Internal pressure	1	1	—
		External pressure	1	1	—

For half the participants the actual injury *diagnosis* was a very stressful event. For one participant, this resulted from being given an initial diagnosis that severely underestimated the extent of his injury. He recollected, “I was gutted really, devastated, frustrated all in one and angry at the hospital for not giving me the proper diagnosis” (Participant 7). For others it was the reality of hearing the diagnosis and its implications for immediate performance-related goals. Perhaps surprisingly, although cited as a stressor in Evans et al.’s (2000) study, receiving the diagnosis has not been widely reported as a stressor for injured athletes.

A number of other stressors emerged from the findings that were salient to a smaller number of participants. The demands associated with *lack of knowledge of the injury/recovery process* described by three participants have been reported elsewhere in the literature (e.g., Gould et al., 1997), as has *inability to train/ loss of fitness* (e.g., Evans et al., 2000). In relation to the former, Participant 3 explained, “if it’s the first

time you’ve done it [injury], you really don’t know what to expect, so that’s really difficult”. In relation to the latter, Participant 2 explained, “I think one of the very first things was... I’m going to lose loads of strength, and lose all my physical attributes because of not training.” For two participants physical size was very important because of the positional demands of their sport – the prospect of losing what they had worked really hard to develop through an inability to train was therefore very stressful. The other stressors identified were *delay in treatment* and *injury severity*. Injury severity has been widely acknowledged to influence athletes’ responses to injury, but the prominence of it across participants did not emerge from the present study at injury onset. Although a little speculative, this may be because it is too soon for athletes to frame their injury in terms of its severity, the associated time-loss and the possible medium to long-term implications at this stage of the injury process. These findings reinforce the idiosyncratic nature of injury-related demands.

b) Sport-related demands. During the onset of injury, *missed opportunities* was the most frequently reported stressor in this dimension, and cited by all team-sport participants. For these participants this demand related to missing important fixtures, competitions and training and playing opportunities that their injuries had occurred in the lead up to. Participants 3 and 4 explained, "I'm going to miss the World Cup now, because of the shoulder injury. It was just a lot of disappointment going through my head." and "I was just gutted, I missed the Six Nations [major international competition] and on top of that the World Cup." This finding is consistent with the loss of performance aspirations and unwelcome interruptions to athletic pursuits identified by Gould et al. (1997) and Bianco et al. (1999). Since elite level performers place a high value on the opportunity to compete on the biggest stage, it is possible that the sense of loss observed was intensified by the loss of such (cf. Evans & Hardy, 1995).

Two of the participants (3 and 4) also reported *playing contracts* as a stressor during this phase. These participants were either trying to extend their semi-professional playing contracts or secure full professional contracts at the time their injuries occurred; "... you're trying to fight for contracts and things, then this happens. You know it's very worrying" (Participant 4). Evans et al. (2000) also reported loss of contract and contractual issues to be stressors among semi-professional rugby players.

c) Social demands. This dimension had the second highest number of stressors associated with it during injury onset. Of these, the most frequently cited were *loss of independence* and *social comparison*. Participants suggested, having to rely on others because of their injuries caused them to feel embarrassed and frustrated, and reduced their self-esteem. One participant commented: "You're not independent are you, and you've got to rely on others all the time, which again builds up all this frustration and things. So it was quite tough for the first few weeks" (Participant 4). Participants with lower limb injuries spent the early stages of their recovery on crutches which meant that they had to rely on others to get around; Participant 1 explained, "I couldn't really go out, I couldn't drive anywhere". For the participants with upper limb injuries, everyday tasks normally taken for granted became daily hassles. This stressor is consistent with incapacitation reported earlier, and provides support for previous research that has reported a loss of independence (e.g., Evans et al., 2000).

Social comparison, reported as a stressor for four participants, related to comparisons with team-mates. Sentiments such as "I'd start watching them and think you should be out there playing as well" (Participant 1) and "I didn't want to watch because

it's what I wanted to be doing" (Participant 4) were reflective of situations where witnessing team-mates training and competing resulted in strain reactions. For Participant 3 seeing other players in his position being selected was particularly taxing, "It's just comparing all the time, and you're seeing players who were third or fourth choice behind you push, passing you now because you're injured and they're having all the perks and stuff." This finding is consistent with those previously reported by Gould et al. (1997).

Other less frequently identified stressors across participants in this dimension were *unwanted attention*, *loss of routine*, *isolation*, and *boredom*. Of these, *isolation* in particular merits further discussion. Although previous research has identified isolation to characterise athletes' injury experience (e.g., Gould et al., 1997; Johnston & Carroll, 1998), only one participant in the current study identified it as a stressor during this phase. One possible explanation for this is that participants retained close contact with their respective clubs and team-mates during this time. An alternative explanation and one perhaps more consistent with the other findings is that because of participants' injury severity and ensuing incapacitation, support provided to help them cope with day to day tasks buffered them from perceptions of isolation. Although perceptions of isolation have been acknowledged to transcend physical contact and proximity, in the present study perceptions of received support may have buffered their negative effects. This suggestion may help to explain why our findings contrast with other studies where injured athletes have reported the immediacy of being cut-off from their team-mates, coaches and routines as increasing their perceptions of isolation (e.g., Evans et al., 2000; Gould et al., 1997).

Rehabilitation. The rehabilitation phase lasted between 6 and 24 weeks from the first physiotherapy appointment to their return to full training. The stressors identified during this phase coalesced into four dimensions: *medical/physical demands*, *sport-related demands*, *social demands*, and *financial demands*.

a) Medical/physical demands. *Lack of rehabilitation progress* has been identified as an important obstacle to recovery during rehabilitation (Bianco et al., 1999; Evans et al., 2000; Gould et al., 1997). The present findings are consistent with this notion with seven participants identifying it as a stressor at this time; two of these participants also reported experiencing setbacks. The frustration described by Participant 3 illustrated other participants' perceptions;

"...half way through towards the end of my rehab, I'd had a guts full of being in the same place really,

I'd had enough of being in the gym. I just wanted to get out, get onto the field and to see some progress.

Four participants perceived their *medical team/treatment* as a stressor. Sentiments such as, "I didn't have much confidence in her, I didn't really think she knew what she was doing" (Participant 1) and "I didn't think they knew exactly what was wrong with me" (Participant 5) illustrated the dissatisfaction some participants had with their medical support. Although none of the participants suggested that this detracted from their rehabilitation adherence, a number of researchers have found efficacy in the treatment to be closely associated with adherence to rehabilitation programmes (Duda, Smart, & Tappe, 1989; Taylor & May, 1996).

Physical attributes are fundamental to success in some sports and in this study their importance probably helps to explain *loss of fitness, physical appearance, and weight loss* as stressors during rehabilitation. One participant suggested, "I'd lost fitness, I'd lost strength, speed, pretty much all of the useful attributes you need in rugby" (Participant 4). In relation to weight loss, Participant 3 recalled: "when I was younger I didn't get in the squad because I was physically too small. So that always plays on your mind if you lose weight, will the coach think I'm too small again." The loss of important attributes, attachments, self-perceptions, and sources of gratification has been acknowledged to be particularly salient for injured athletes (cf. Evans & Hardy, 1995; Wiese-Bjornstal et al., 1998). Although fitness and weight issues have previously been reported in the research literature, interestingly the latter has more commonly been associated with weight gain (e.g., Bianco et al., 1999; Evans et al., 2000). Finally, although the salience of *rehabilitation setbacks* has previously been reported during rehabilitation (e.g., Bianco et al.), only two participants identified it as a stressor in the present study.

b) Sport-related demands. The most frequently cited demand during rehabilitation was the possibility of not being able to recover sufficiently to *perform at pre-injury level*. Participant 2 explained, "Sometimes you worry if it's going to be the same when you come back. Is the shoulder going to be the same as it was?" Participant 6 echoed a similar sentiment, "I'm concerned, am I going to play again...the uncertainty surrounding whether I will recover sufficiently to play at the level I did before was a constant worry?" Consistent with previous research this finding reinforces the importance of attaining pre-injury levels of performance (Bianco et al., 1999; Evans et al., 2000).

Missed opportunities again emerged as a stressor in the rehabilitation phase, and related to training, socialising and weekly competition. Participant 6's sentiments reflected those of other athletes; "It was really frustrating missing out on so many things ... just seeing people you know that you can beat getting in front of you in the team and you know you should be in there".

In the present study, *external and internal pressure* to recover, which came from coaches and parents, and themselves were identified as stressors by the same three participants. Participant 1 recalled, "...there's so much pressure from outside, from high representative coaches who want to select you and you're trying to fight for contracts and things, then this happens. You know it's very frustrating." Podlog and Eklund (2006) reported similar findings in relation to the pressures from coaches on injured athletes to return, often prematurely. "It was more...pressure from myself thinking I've got to get back in the team" (Participant 1) typified the internal pressures that these three participants experienced.

c) Social demands. *Social comparison* continued to be a stressor for four participants during rehabilitation. These comparisons related to fitness and selection. For example, "These boys are going to be a lot bigger and quicker and stuff 'cause they've been doing all this training in the meantime" (Participant 2) and "you see players pushing through and getting capped [selection for a national team] and...you can't do anything about it" (Participant 5) reflected players' perceptions. Interestingly participants who cited this stressor were either trying to secure professional contracts or selection for their national sides at the time of injury. Social comparison and exposure to others playing has previously been reported in the context of its detrimental effects on rehabilitation adherence (Evans et al., 2000) and in heightening injured athletes' perceptions of loss (Gould et al., 1997; Johnston & Carroll, 1998).

Isolation from friends, coaches, and team-mates, reported in a number of previous studies (e.g., Johnston & Carroll, 1998; Udry et al., 1997) was identified as a stressor for four participants during this phase. These participants suggested that as rehabilitation progressed they became increasingly isolated. For example Participant 7 stated, "they're carrying on and you're just sat away not even part of it." Although a little speculative, the heightened awareness of and perception of isolation during this phase may reflect a reduction in the level of social support provided during the previous phase.

d) Financial demands. Financial demands, cited by two participants, related to the *cost of rehabilitation*. Participant 10 suggested, "it [rehabilitation] was

stressful because of the money.” Other participants received financial support from their clubs or teams, which perhaps explains why this was not a more prominent stressor among participants.

Return to competitive sport. The return to competition phase involved participants taking part in full training and competition, but often at a lower standard in order to improve match fitness prior to returning to pre-injury levels of competition. Participants reported the fewest number of stressors during this phase and only *loss of fitness* persisted as a stressor from the previous one. Two dimensions accounted for the stressors cited: *medical/physical demands* and *sport-related demands*.

a) *Medical/physical demands.* Consistent with the findings of previous research, the most frequently cited stressors during the return to competition phase were *loss of fitness* (specifically match fitness) and *risk of re-injury* (e.g., Bianco et al., 1999; Podlog & Eklund, 2006).

With regard to the risk of re-injury, Participant 8 suggested:

“The first couple of rounds of golf I was very aware of what I was doing and very conscious of not hitting any bad shots that could harm the hand, it was quite a worry that one bad shot and it could be all over again, I thought a lot about it. ... it influenced my shot type, my ability to really swing hard at the ball. I was more cautious around the golf course, definitely wasn’t my usual self on the golf course for a few weeks”.

Many echoed the same sentiment, “I was really conscious about it [injury] happening again”. No other medical/physical stressors were identified during this phase by more than one participant.

b) *Sport-related demands.* The only sport-related stressors identified during this phase were *internal pressure* and *external pressure*, which were only identified by one participant.

Differences in the stressors experienced by team and individual-sport athletes

The second purpose of the present study was to explore the differences in the stressors experienced by the team as compared to individual-sport athletes.

Onset of injury. During injury onset team-sport athletes reported 15 stressors compared to 11 for individual-sport athletes. Among the stressors cited, notable differences between the groups included; *diagnosis* (medical/physical demands), *missed oppor-*

tunities and *playing contracts* (sport-related demands), and *loss of independence* and *social comparison* (social demands). For the majority of team sport athletes their injuries signified the loss of important short-term goals in relation to national squad selections, and in the medium and long-term their goal of securing professional playing contracts. These athletes perceived the diagnosis to represent for them, therefore, a significant loss, the extent of which was determined by the diagnosis. This was not the case for the individual athletes, because the timing of the injury was not of such significance in relation to imminent goal achievement. The impending loss of short and medium term goals for the team-sport athletes was also reflected in them citing missed opportunities (e.g., a World Cup) and the threat the injury posed to securing a contract.

As semi-professional and professional athletes, the team-sport participants spent much of their time surrounded by team-mates who were vying for a place on the team. The injury meant that they saw themselves replaced in their teams by other players. The high-level team sport environment is an extremely competitive one, one where comparisons between players in relation to, physical, technical, tactical and psychological attributes is an integral part. As a result, and as suggested by the team-sport athletes, they are likely to make comparisons between themselves and their non-injured counterparts, particularly during the onset of injury when the physical disability and appearance of injury are most pronounced. The loss of independence reported by team-sport athletes compared to their individual sport counterparts was perceived to be a sign of weakness, one which reinforced their injured status and in their opinion would be perceived by others as a ‘physical short-coming’ – which within their subculture is seen as extremely undesirable. The support they received, therefore, although it may have had a number of benefits, was perceived as reinforcing the presence of undesirable attributes.

Rehabilitation. Team-sport and individual athletes cited a similar number of stressors during rehabilitation (11 and 9 respectively). However, once again there were a number of notable differences. These differences related to the majority of the stressors within the medical/physical demands dimension (*lack of rehabilitation progress*, *medical team/treatment*, *loss of fitness*, *physical appearance*, *rehabilitation setbacks*), both the stressors in the social demands dimension (*social comparison*, *isolation*), and the *cost of rehabilitation* (financial demands). With the exception of isolation and cost of rehabilitation, more team-sport athletes than individual athletes identified the aforementioned as stressors. The basis of these stressors was again the loss of short-term goals and

the perceived threat to longer term aspirations. These exacerbated players' perceptions of their attainment of full recovery and what they perceived as the rehabilitation markers that signalled progress.

The most notable differences in the stressors identified during rehabilitation involved social comparison and isolation. These differences reinforced the environmental and socio-cultural differences between the team and individual sports. Specifically, maintaining contact with the team environment and training and preparing for their return within this environment may have reduced the likelihood of perceptions of isolation, but exacerbated the negative responses associated with social comparison. The injured team athletes once again compared themselves and referenced their fitness, and technical and tactical skills against players who had not had their training and performance interrupted as a result of injury. In contrast, the golfers prepared for their return to sport, largely training and practising on their own. While this meant they did not engage in social comparison to the same extent, unfortunately it did mean that they felt, comparatively, more isolated. This finding is perhaps surprising given that golfers spend a considerable amount of time practising on their own.

Return to competition. Consistent with this phase containing the smallest number of stressors, it also contained the smallest number of differences between individual and team-sport athletes. These differences related to *risk of re-injury*, *loss of fitness*, and *rehabilitation setbacks* (medical/physical demands). Once again, more team-sport athletes identified medical/physical stressors than individual-sport athletes. These differences were accounted for by the physical demands and the combative nature of rugby, as compared to golf, and the short and long-term aspirations of the team-sport players to become full-time professional athletes. These exacerbated their concerns that they may not achieve their pre-injury levels of physical fitness, that the injured limb might 'break-down' again, and the threat of setbacks to their successful return to pre-injury performance levels. This finding reinforces the suggestion that individual and situational difference variables affect the way athletes respond to injury.

Summary and conclusion

We examined the stressors experienced by injured athletes across three phases of injury and explored the differences between team and individual-sport athletes. While a number of the findings echo those previously reported and may not be particularly 'unique' in that regard (e.g., Bianco et al., 1999;

Gould et al., 1997, Podlog & Eklund, 2006), the findings advance our knowledge and understanding in a number of ways. As highlighted in the introduction, the present study aligns the conceptualisation of stressors in the injury literature with that of mainstream stress research, and distinguishes a stimuli based approach to one that incorporates responses. As a result, the findings have the potential to make an important contribution to the research literature regardless of whether the stressors identified have been reported previously.

The present study also elucidates the stressors that characterise the different phases of injury; injury onset, rehabilitation and return to competitive sport. This finding is important because different demands have been reported to be associated with different phases of injury. To elaborate, while stressors such as loss of fitness and social comparisons persisted across phases, the majority of the stressors were phase specific. For example, during onset the most prevalent stressors across participants were incapacitation and loss of independence, during rehabilitation, lack of rehabilitation progress and performing at pre-injury levels, and during return to competitive sport, risk of re-injury. The phase specific nature of these stressors has important implications for the design and implementation of intervention strategies aimed at expediting athletes' successful recovery from injury and return to competitive sport.

The findings reported here also highlight some differences in the stressors experienced by the team-sport and individual-sport athletes, which again were temporally defined. The largest differences were observed for the stressors *missed opportunities* and *social comparison* (injury onset), *social comparison* and *isolation* (rehabilitation), and *loss of fitness* (return to competitive sport). While a number of these stressors can be contextualised to sporting or social interactions, which may reflect the nature of the sport activities, they provide support for the idiosyncratic nature of the stressors experienced. What we mean by the latter is that there were a number of differences between the stressors athletes experienced that may not be adequately explained by participants being team as compared to individual-sport athletes. In line with Wiese-Bjornstal et al.'s (1998) model the findings may be best explained by individual and situational difference variables. Although somewhat speculative, this suggestion perhaps offers a better explanation as to why only nine of the stressors identified were reported by five or more participants.

As with all studies, the present study had a number of limitations. Although we chose rugby and golf to reflect team and individual-sport activities, we acknowledge that rugby and golf differ on a number of other dimensions, which may have confounded

some of our comparisons (e.g., type of skilled activity, importance of physical attributes such as size and strength, combative nature of the sports, and competition formats). In addition, it is possible that some stressors, such as internal and external pressure may be characterological traits for these particular athletes and not a result of the injury. Unfortunately, in the absence of 'normative' data we are not able to preclude the possibility that some stressors were not injury-specific. Finally, although we used a retrospective design to secure relatively homogenous samples and to capture the various phases of injury, the use of a retrospective design may be considered a limitation of the present study. Specifically, retrospective designs are susceptible to the effects of memory decay and bias through, for example, the influence of rehabilitation outcome (Brewer et al., 1995). That said, to have conducted the study concurrently could have introduced other confounds that could have threatened the validity of the findings. For example, if the participants had been interviewed 'during' each of the phases the interviewer may have acted as a source of social support, which may have 'buffered' the effects of some stressors.

Researchers should consider the issues identified here as they relate to sampling and study design to ensure they provide a meaningful insight into the demands injured athletes experience. One way of achieving this might be to incorporate both concurrent and retrospective approaches to offset the potentially confounding effects of both. In relation to the conceptual issues surrounding the classification of stressors, although previous injury research has in some instances inappropriately labelled what are in essence responses as stressors, it is not difficult to see how this may have occurred. However, it is important that conceptually accurate definitions are adhered to, especially given their theoretical and applied implications (cf. Fletcher et al., 2006). Researchers should continue to adopt a more fine-grained analysis to delineate between stressors and responses and to elicit if and when a response, such as physical pain actually becomes a stressor in its own right. The present study also highlighted the idiosyncratic nature of athletes' injury experience. Researchers should therefore explore the influence of individual and situational variables on the stress process, and the effects injury-related stressors have on recovery-related outcomes. Finally, researchers should capture the complex and dynamic nature of the stress process, and account for stressors, strain, appraisals and coping responses.

A number of practical implications emerge from this study. The findings suggest that injured athletes may experience a number of injury-related stressors that in the main are phase specific. These have important implications for the design and imple-

mentation of interventions targeted at averting or alleviating their potentially detrimental effects. Specifically, creating a supportive environment could help reduce the likelihood of injured athletes experiencing a number of the stressors associated with injury onset, particularly if the support matches athletes' needs. For example, tangible support could help avert the debilitating effects of *incapacitation*. As a result, educating athletes, coaches and members of the sports medicine team about the prevalence of specific stressors and the importance of meeting the needs associated with these may help to eliminate them. Where stressors cannot be eliminated, the present findings suggest that athletes would benefit from informational support to enable them to deal more effectively with stressors associated with the medical/physical demands. During injury onset this support may enhance athletes' knowledge of the injury recovery process and, during rehabilitation, factors that affect rehabilitation progress and fitness status. The aforementioned are consistent with the intervention effects reported by a number of studies (e.g., Evans & Hardy, 2002; Evans et al., 2000; Theodorakis, Beneca, Malliou, & Goudas, 1997), studies which also support the use of goal setting to alleviate some of the stressors observed here. Sport psychologists can play an integral role both educating athletes in the use of intervention strategies (e.g., goal-setting, self-talk, imagery) to deal with specific stressors and more generally in the provision of social support; approaches that previous research suggests should involve enhancing confidence, motivation and treatment, rehabilitation and self-efficacy (e.g., Cupal & Brewer, 2001; Evans & Hardy, 2002; Theodorakis et al., 1997).

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