

Walker, N., Thatcher, J., Lavalley, D., & Golby, D. (2004). The emotional response to athletic injury: Re-injury anxiety. In D. Lavalley, J. Thatcher, & M. Jones (Eds.), *Coping and emotion in sport* (pp. 87-99). New York: Nova Science.

Introduction

Injury is often an unfortunate consequence of participation in sport. With increased participation, and subsequent increased injury rates, athletic injury is now a significant health concern (Brewer, 1998). Some studies have clearly demonstrated that athletic injury has, not only a physical, but also, an emotional impact upon the injured athlete (e.g., Daly, Brewer, Van Raalte, Petitpas, & Sklar, 1995; Gould, Udry, Bridges, & Beck, 1997; Smith, Scott, O'Fallon, & Young, 1990).

Understanding emotional responses to injury is vital for sport psychologists, coaches, and physiotherapists. Ford and Gordon (1998) stated, "Sport trainers, sport therapists and physiotherapists are required to address the psychological factors when treating injured athletes and apply various psychological strategies if complete, holistic recovery is to occur" (p. 80). To achieve holistic recovery, the personnel involved in the rehabilitation process must understand the psychological processes involved with injury. If they are aware of the emotional responses to injury they can assist the athlete to holistically recover and prevent adverse responses to injury disrupting rehabilitation and the return to competition (Pargman, 1999).

Commonly reported emotional responses to athletic injury include disbelief, fear, rage and an inability to cope with lengthy injury rehabilitation and the restrictions imposed by injury (e.g., Smith, Scott, & Wiese, 1990). However, more recently, fear of re-injury has been highlighted as a response to athletic injury (e.g., Draper & Ladd, 1993; Gould *et al.*, 1997; Heil, 1993a; Pargman, 1999).

The Impact of Fear of Injury and Re-Injury

Heil (1993a) speculates that fear of re-injury is always present for the injured athlete and the athlete who has just recovered from injury. This suggestion has been supported by previous research within this context (e.g., Draper & Ladd, 1993; Gould *et al.*, 1997).

Klavora (1976) proposed that emotions related to re-injury thoughts actually predispose athletes to re-injury, although he did not provide any empirical evidence in support of this claim. Pargman (1999) stated that fear of re-injury also detrimentally influences performance when the athlete returns to competition. Although providing an explanation for the impact of fear of injury and not fear of re-injury, Heil's (1993b) psychophysiological mechanism of risk (see Figure 6.1) can be used to illustrate these ideas.

Insert Figure 6.1 here

Heil (1993a) proposes that fear of injury results in physiological and psychological changes that impact performance and ultimately increase the risk of injury. This concept could be applied to fear of re-injury (e.g., Taylor & Taylor, 1997). According to Heil (1993a), fear of injury diminishes concentration and self-confidence (psychological changes) and produces increased muscle tension and over-arousal (physiological changes). The athlete who fears injury is also said to be preoccupied with the physical sensations arising from the site of the injury or slight reductions in performance (e.g., brief loss of balance). These perceptions affect performance through decreased efficiency in the biomechanics of skill execution, poor use of energy resources and decreased attention. This may then intensify the initial psychological and physiological factors, which leads to a mutually reinforcing, self-perpetuating cycle (Heil, 1993a). Taylor and Taylor (1997) stated that fear of re-injury produces the same responses as those resulting from fear of injury as proposed by Heil (1993a). These responses include psychological decrements such as reduced confidence and poor focus that inhibit progression in the return to sport. They also advocate that re-injury fears cause physiological changes, such

as muscular bracing, which can increase the likelihood of re-injury. Muscular bracing (also called muscular guarding or splinting) is a natural protective response to injury that isolates or decreases the mobility of the injured area through postural adjustment (Heil, 1993a).

Taylor and Taylor (1997) identify that fear of re-injury develops from a lack of confidence and trust in the injured area which are natural expected reactions following injury. They go on to discuss the consequences of fear of re-injury, suggesting that a strong focus lack of confidence and trust when an athlete fears re-injury can influence the onset of re-injury and produce a tentative performance. Hesitancy will produce a substandard performance that will perpetuate the cycle and such doubts will also cause decreased co-ordination and increased muscle tension and bracing that are linked to re-injury occurrence. Technical distractions may also occur and thus increase the fear of re-injury further. On return to competition athletes often report being 'rusty' and a challenge for them is to return to the comfort and ease of skill execution that was evident prior to injury. Generally, they often become pre-occupied with details of technique to the detriment of natural feelings associated with well-practiced and learnt skills. If they are focusing on the particulars of a technique they are less likely to be attending to relevant external cues associated with heightened self-consciousness. Focusing on the technique can also cause a lack of flow to the movement, as well as muscular bracing due to perceived discomfort, that is common following injury. Thus increasing the likelihood of re-injury and decreasing confidence in skill execution.

Fear of re-injury demands that the athlete mobilizes coping resources. It may also manifest as caution during rehabilitation and return to play, an effect that generally resolves with time (Heil, 1993a). However, this is not to say that athletes should ignore their fears, as previously illustrated, they are suggested to impact performance and

increase the likelihood of re-injury. Where the fears are greater and more long-term Heil (1993a) suggests that this is likely to be disruptive enough to affect the athlete's speed of recovery and mental readiness for sports performance. However, there are no diagnostic criteria or research studies that have quantified that different levels of fear of re-injury exist. Hence, at present it is impossible to state that fear of re-injury ranges along a continuum of varying intensities. Research has examined fear of re-injury in athletes and the following section provides an overview of key findings from this research.

Research Findings

Gould *et al.* (1997) conducted retrospective qualitative interviews with 21 U.S. alpine and freestyle ski team members. Results were content analyzed with 182 stress sources identified, of which fear of re-injury was highlighted. 57.1% of the injured members of the U.S. ski team reported fear of re-injury as a source of stress during rehabilitation. Petitpas and Danish (1995) outlined that the athletes' fears stem from the loss of a daily practice routine and normal schedule outside of sport, the ongoing pain and discomfort associated with injury and the uncertainties about making a complete return to sport (see also Heil, 1993a). Taylor and Taylor (1997) supported this and stated that fear of re-injury occurs during preparation for the return to sport and is due to incomplete or ineffective rehabilitation. They also stated that fear of re-injury is heightened towards re-entry into competition. It could be that fear of re-injury is heightened at this time due to a lack of confidence in the injured area resulting from the loss of a daily practice routine and a lengthy rehabilitation time (e.g., Petitpas & Danish, 1995). It is also at this time that the athlete no longer has the direct support, guidance and reassurance of the therapist. They are venturing back into possible contact situations in their sport and ones similar to those when the original injury occurred. Particular problems arise if athletes attempt to return to competition too soon at a time when they are neither physically nor

psychologically prepared for the return to sport. Fear of re-injury is particularly evident if rehabilitation has complications, unusual obstacles, or setbacks that slow recovery or interfere with effective rehabilitation (Taylor & Taylor, 1997). At the re-entry stage, in an athlete's impatience to regain their pre-injury status, they can be too ambitious on their return to practice and competition which can damage confidence, motivation, focus and increase the possibility of fear of re-injury (Taylor & Taylor, 1997).

Fear of Re-Injury or Re-Injury Anxiety: Conceptual Clarity

Walker, Thatcher, Lavalley, and Golby (2002) have argued against the term fear of re-injury and state a more appropriate term would be re-injury anxiety. Re-injury anxiety differs from sports performance anxiety, which is associated with a failure to achieve a skill without the implication of injury (Heil, 1993b). Walker *et al.* (2002) examined the emotional response to athletic injury using a longitudinal, case study approach. Injured athletes ranging from University standard, semi-professional through to professional status were sampled from Rugby League, Rugby Union, Professional Football and Martial Arts and were interviewed fortnightly, using an Existential Phenomenological interview approach (Dale, 1996). The interviews produced information regarding the athlete's experience of their injury during the previous fortnight. Interviews commenced at the onset of injury and followed each athlete through the recovery process, including the return to physical activity. In addition, all athletes were interviewed three months following their return to physical activity to allow reflection on issues raised previously and discussion of the athlete's experiences in recommencing physical activity. All interviews were transcribed and analyzed using procedures of inductive content analysis to assess temporal changes in emotions and individual differences in responses to athletic injury. All athletes described emotions that appeared to manifest *re-injury anxiety* as opposed to *fear of re-injury*. The injured athletes used terms such as nervousness, worry

and unease when discussing emotions related to re-injury thoughts in contrast to fear terminology such as terror, dread and panic. Hackfort and Schwenkmezger (as cited in Kleinert, 2002) summarized the fear-anxiety debate and concluded with fear there is certainty regarding these facts [sources of danger], and therefore actions of escape occur. Anxiety is associated with the development of the higher nervous system and the abilities of abstraction and anticipation. Athletes within Walker *et al.*'s (2002) study did not take actions of escape, despite being anxious about re-injury during rehabilitation exercises. For example, they continued to participate in rehabilitation throughout the recovery process, although often with some hesitation. Hackfort and Schwenkmezger define fear as stimulus-specific and associated with definite danger, whereas anxiety is connected to the anticipation and imagination of ambiguity and uncertainty. Therefore, anxiety is more a feeling of what might happen rather than a response to an obvious fear-provoking situation. This can be applied to Walker *et al.*'s (2002) findings as the athletes in this study were anticipating possible re-injury and imagining scenes of the injury recurring rather than being aware of a definite danger that would cause re-injury.

Hackfort and Schwenkmezger (as cited in Kleinert, 2002) stated that fear is a fundamental biological mechanism, whereas anxiety is composed of different elements (e.g., cognitive and somatic) and is associated with learning and social processes. This was also evident within Walker *et al.*'s (2002) results as athletes reported both cognitive state and somatic state anxiety. Within the cognitive state dimension the athletes reported thinking about the injury recurring during rehabilitation exercises, functional rehabilitation exercises and on the return to practice and competition. They reported experiencing images of the injury recurring that played over in their minds within various clinical and sport specific situations. They also reported that, in conjunction with their

cognitive state anxiety, they felt nauseous, sweaty and tense, reflecting their experience of somatic state anxiety.

Despite injury being a definite danger in sports participation there is no certainty or clarity regarding the extent of injury risk and the character of injury situations, therefore, athletes associate the risk of injury with situations of varying general characteristics and degrees of uncertainty (Kleinert, 2002). This implies that injury is individual and dynamic, hence is a different experience for each athlete, for any given situation and time (Walker *et al.*, 2002). For all the athletes in this study, re-injury anxiety was evident throughout the injury process, including both rehabilitation and re-entry to practice/competition. However, for these athletes, re-injury anxiety was more salient towards re-entry to competition, as has been suggested by Taylor and Taylor (1997). Re-injury anxiety was also more salient for the more severely injured athletes in the sample. The two more severely injured athletes stated that they were anxious they would become re-injured because they could not face the lengthy rehabilitation, the pain suffered and the daily hassles the injury imposed. They also stated that they were anxious about re-injury because they believed their injury site was more vulnerable and weakened due to the severity of their injury, hence anticipating that minor blows might cause re-injury.

A high degree of ambiguity remains regarding injury situations and the injury itself, hence, a more accurate term appears to be re-injury anxiety rather than fear of re-injury. Moreover, it is stated that injury-related concerns and anxieties are in many respects not fundamental or biological, but result from previous experience (e.g., the original injury experience) and other developmental factors (e.g., quality of rehabilitation, personality, injury severity, injury location, rehabilitation time) (Kleinert, 2002). This kind of emotional development is more typical of anxiety than fear. Hence, in striving for conceptual clarity, the term re-injury anxiety is more appropriate than fear of re-injury.

Interventions to Reduce Re-Injury Anxiety

Given the potential implications of re-injury anxiety upon performance and psychological readiness during rehabilitation and return to competition and the increased likelihood of actual re-injury it is important to address coping strategies and interventions that could be employed by athletes to cope with re-injury anxiety. Heil (1993b) believes management of re-injury anxiety (although he terms this fear of re-injury) should proceed through the six steps. These six steps will be discussed in detail later in the chapter in relation to their application to a case study of an athlete experiencing re-injury anxiety.

Heil (1993b) claims the two most supported interventions for re-injury anxiety are relaxation training and imagery (e.g., Cupal & Brewer, 2001). The effects of a cognitive-behavioral intervention, comprising 10 individual sessions of relaxation and guided imagery on knee strength, re-injury anxiety and pain following anterior cruciate ligament reconstruction ($n = 30$) were examined by Cupal and Brewer (2001). All athletes also undertook physical therapy. Re-injury anxiety was assessed on a single item 10-point Likert-type scale. Although temporal reductions in re-injury anxiety were evident in the three groups of athletes (control, placebo and treatment), only participants in the treatment group demonstrated reduced re-injury anxiety at 24 weeks post surgery to a significantly greater extent (adjusted $M = 1.09$) than participants in the placebo group (adjusted $M = 3.98$) and participants in the control group (adjusted $M = 3.44$). Variance effect size calculations revealed that the treatment accounted for 62% of the variance in reduction of re-injury anxiety ($\eta^2 = .76$). It should be noted however, that the 10-point Likert-type scale used to measure re-injury anxiety in this study does not have established validity and reliability. Cupal and Brewer (2001) recommended therefore that future studies should address the limitations inherent in using a single-item re-injury anxiety scale. They suggested adapting a multi-item scale with demonstrated psychometric

properties to specifically measure re-injury anxiety. The authors of the current chapter are developing a tool to measure re-injury anxiety. This will also help in more directly determining the efficacy of interventions for helping athletes to cope with re-injury anxiety. The lack of a valid and reliable measurement instrument for assessing re-injury anxiety presents a limitation to current research and interventions, including the one which is described below, and on which the remainder of the chapter is focused.

Case Study

A 21 year old, national level, female soccer player, playing within the Nationwide Women's Premier League, contacted the first author with regard to helping her to cope with re-injury anxiety. The client had a total of 10 years competitive soccer experience, of which 3 years were at an elite level. The client's injury occurred during a competitive match where she and an opposing player clashed heads whilst competing for a header. The client described how both players missed the ball and the opposing player's head hit her left eyebrow causing a gash requiring 20 stitches, of which 10 were visible on the outside of the wound. The athlete stated, "We both went up for it [the ball] and missed. I really went for it and bang, the front of my head, all around my eyebrow smacked against the back or side of her head as she came back and went for it." She went on to describe the injury stating, "It was awful. The cut was massive, I felt dazed and there was blood everywhere. All over my shirt, my face, her and the pitch." She described the pain and the reactions of her teammates and the referee stating, "The pain came after the initial shock and it was agony. I knew it was bad because of everybody's face. They all looked so shocked." The injury, classified as moderate according to the National Athletic Injury/Illness Reporting System (NAIRS) (Coddington & Troxel, 1980), prevented participation in training for two weeks prior to the athlete being given permission to return to training (excluding heading or competition) by the team doctor. The client was

instructed that she could begin competitive match play and the skill of heading after three weeks, at which time she contacted the first author for psychological support. The client described her response the day following the injury stating, "I couldn't look in the mirror. I was so worried about what my face would look like, how big the stitches were and worried about how big my scar was going to be." She stated that three weeks on, the injury was healing well and that these issues were no longer of concern. Upon return to training, the client identified that she did not commit to executing headers when challenged by another player and identified that she was now more anxious of heading as the return to competitive match play approached. She stated, "I'm training again and just can't go in for a header when challenged. I just don't commit. I'm worrying about it more as I'm making progress to regaining my place, apart from the heading, and we've games coming up." She stated that she had been working on headers during training and when they were unchallenged she could execute the skill, however, when a player was standing next to her or challenging for the header she could not execute the skill because she was worried about the injury recurring. She stated, "Heading the ball with no challenge is OK, that's fine. It's just when I'm against an opponent, even against a teammate. Then I just chicken out because I think I'm going to get hit again, the pain, the worry that the scar would be worse a second hit and the missing training. I jump for it but just don't commit. I've no intention of making the header. I'm more concerned about where the other player's head is, that my arms are up to protect me and so my eyes aren't even on the ball." She claimed that heading used to be a natural skill for her, it was a skill she was well known for within the team and by opposing teams but since the injury she was worried of losing her reputation as a "powerful midfield player who dominates the air". In addition, she now thinks about the injury recurring, she feels tense and sick when executing challenged headers and commented that "this makes my performance worse". She reported feeling

"so sick when the coach mentions anything to do with heading drills. My hands shake and I get these visions of heads clashing, seeing the blood and my hands up at my face. I feel dizzy like I did when it happened and I just can't pull it off. I go up for it like a fairy and never get near the ball. I'm too worried about protecting myself and where the other player's head is. I'm so stiff too I don't even jump right. If I did get my head to it, my body is so tense the ball would go straight up in the air and come right back down again. The technique isn't right because I'm worried and paying attention to things I shouldn't be." She went on to describe that she felt confident in her ability to execute a header unchallenged, however, she frequently experiences visions of the injury recurring which include the events that occurred when she sustained her injury.

The client, an experienced, elite level female soccer player, was demonstrating re-injury anxiety about her return to training/competition. She sustained a head injury when executing a header during competitive match play. She had vivid recollections of the injury including the events leading up to the onset, the blood loss, the pain suffered, the number of stitches required, the nausea and dizziness experienced. She had her own perceptions of the severity of the injury based upon the blood loss and the immediate reactions of her teammates and the referee. Following clearance from the doctor to recommence training, the injury has had an impact upon her performance, specifically the skill of heading the ball when challenged. This is a skill the client was previously renowned for in her playing position. However, because of the anxiety about the injury recurring she was not committing to headers when challenged in training, but could still execute the skill effectively when not challenged by another player. The anxiety experienced was becoming more salient as re-entry into competition approached, supporting the suggestions made by Taylor and Taylor (1997) and Walker *et al.* (2002).

The client's re-injury anxiety was detrimentally impacting her performance, a common outcome as suggested by Taylor and Taylor (1997). The client reported being tense and having poor attention in relation to executing headers under challenge, but not when performing the skill alone. In support of Taylor and Taylor (1997), the client demonstrated muscular tension and was focusing on the injured site directing attention away from the relevant cues that then negatively impacted performance, confidence and could have increased the risk of actual re-injury. The client appeared frustrated that the skill was no longer as easy to execute compared with prior to the original injury. Both cognitive and somatic anxiety were evident within the client where she clearly described the thought processes and somatic responses to images of injury and re-injury. She also associated the risk of re-injury differently with different situations; she was comfortable executing a header in training under no challenge, but experienced anxiety when executing a header in training under challenge and was becoming increasingly anxious about executing a header under challenge during competitive match play. This offers further support for the term re-injury anxiety as opposed to fear of re-injury, in that athletes associate the risk of injury with situations of variable uncertainty and contextual characteristics. In managing the client's re-injury anxiety, Heil's (1993b) suggested the following six steps:

1. The client was reassured that re-injury anxiety was a common response following injury. It was explained to the athlete that it is normal for them to experience this emotion. Crossman (2001) also advocates this, stating the need to inform the athlete what to expect during rehabilitation and encourage them to ask questions. It is important to provide detailed answers/explanations at a suitable level in relation to the age of the athlete, their sport and injury status and their understanding of injury/healing processes.

2. The consultant reassured the client that the re-injury anxiety was not a problem in that it could be managed with the aid of psychological interventions. Reassuring the athlete that the emotion itself is not a problem can be misconstrued given the chapter's earlier claims regarding the impact these emotions can have on rehabilitation, performance and the likelihood of actual re-injury. The emotions can be a problem should they not be addressed, it is important to reassure the athlete that the emotions are not a problem in as far as they can be addressed with the use of psychological interventions. Should the practitioner encourage the athlete to perceive the emotion as a problem it is likely that the emotion will be exacerbated. For example, the athlete may not fully adhere to rehabilitation and may pull out of exercises due to anxiety related to becoming re-injured, both of which may actually increase the likelihood of re-injury.
3. The adaptive role of the re-injury anxiety was explained in view of setting safe limits in rehabilitation and re-entry to training and competition to reduce the risk of actual re-injury.
4. The current state of injury was addressed in collaboration with the medical team. The medical staff stated that the client had recovered and was able to recommence competitive play. This was communicated to the athlete in an attempt to reassure the client that her injury had in fact healed hence any anxieties regarding the weakness of the site or the worry that the site had in fact not healed were not justified.
5. Safe limits were identified with regards to the medical doctor ruling out heading for the first three weeks of the injury and specifying that the client should wear a head bandage and use a lubricant on the injured site for a further three weeks to reduce the possibility of further injury.

6. Psychological skills were integrated in the form of systematic desensitization (Wolpe, 1958).

The remaining elements of this chapter will consider the systematic desensitization (SD) intervention employed and its perceived effects.

SD has been demonstrated as an effective method to reduce fears (e.g., Ost, 1989; Zinbarg, Barlow, Brown, & Hertz, 1992). SD is a clinical procedure for the treatment of phobias such as fear of flying, heights and public speaking (Crossman, 2001). Crossman (2001) reports the usefulness of SD within her practice for treating athletes who have re-injury anxiety. Its usefulness has also been reported within a case study discussed by Rotella and Campbell (1983). It is a technique also termed counter-conditioning, which pairs relaxation with images of the anxiety-provoking stimulus (Crossman, 2001). Counter-conditioning involves reducing a conditional response (e.g., re-injury anxiety) by establishing an incompatible response (e.g., relaxation) to the conditioned stimulus (e.g., heading the ball when challenged by another player). Wolpe (1958) stated that most abnormal behavior is learned like normal behavior, so it can be unlearned and replaced with more adaptive reactions (Tredget, 2001). Wood (1981) believes that pairing relaxation with the anxiety-provoking stimulus causes a new learned response to be developed, which is incompatible with anxiety. To conduct systematic desensitization the athlete must recognize the anxiety that is preventing them from full participation. This seems in conflict with Heil's (1993b) suggestion that the consultant should reassure the athlete that re-injury anxiety is not a problem. This conflict was addressed by advocating that the anxiety can be managed therefore it should not be viewed as a problem. In the current female soccer player's case the athlete recognized that her anxiety over re-injury and visions of re-injury were preventing her from full participation in soccer, as she was unable to execute a header when challenged by another player.

Recognition of Anxiety Response

During consultation with the athlete, SD was adopted as a coping strategy. First, to encourage the athlete to recognize her anxiety, she was asked to describe situations that were related to the anxiety-provoking stimulus. She was then asked to write on separate cards the eight anxiety-provoking situations which she disclosed in as much detail as possible (see Table 6.1). The description on each card enabled the athlete to construct vivid images of each situation in detail. The athlete was then asked to rate each situation on a scale from 0 (comfortable/relaxed) to 10 (extremely anxious). Following this she was asked to rank the situations according to the intensity of anxiety to create an anxiety hierarchy, organizing the cards in order from the least anxiety provoking situation to the highest.

Insert Table 6.1 about here

Counter-Conditioning

The athlete then imagined, as vividly as possible, the least anxiety-provoking situation. The image was paired with progressive muscular relaxation (PMR; Jacobson, 1938). The client was familiar with PMR as she had utilized this tool within performance enhancement sessions with the consultant prior to sustaining the head injury. When the athlete could imagine the situation and remain in a relaxed state, she then progressed to imagining the next situation in the anxiety hierarchy. No more than two anxiety-provoking situations were dealt with in any one session. The client and sport psychologist then worked through the hierarchy, pairing imagery and relaxation, until the athlete was able to overcome her anxiety when presented with images of the situations that were identified as the root of her anxiety.

Application to Competition

Following completion of the hierarchy (achieved in approximately three weeks) the client then went on to carry out (not just imagine) each of the anxiety-provoking situations (achieved in approximately four weeks). For example, the client demonstrated a low to moderate level of anxiety regarding heading the ball when a teammate was positioned next to them (a recorded anxiety rating of 3/10). The client, the consultant, the coach and a teammate, during a normal training session, worked at counter-conditioning the anxiety response to each situation. Whilst repeatedly performing headers with a teammate positioned next to the client, she used progressive muscular relaxation when any anxiety was experienced within the task to reduce the conditional response (anxiety) by establishing an incompatible response (relaxation) to the conditional stimulus (heading the ball with a teammate positioned next the athlete). This technique was repeated in several sessions until the client felt that the conditional stimulus no longer caused the conditional response of anxiety. At this time the next conditional stimulus (e.g., heading a ball with a teammate jumping next to the player but not challenging for the ball) was counter-conditioned and so forth until all anxiety provoking situations were counter-conditioned and the client could perform a header without experiencing anxiety in all the situations that previously caused an anxious response. Within seven weeks the athlete was playing competitive soccer again and executing challenged headers effectively and with self-confidence, as self-reported during a follow-up interview.

A Summary of the Client's Interpretation of the Intervention

The client quickly engaged in the intervention and had approximately three months of mental skills training experience prior to her injury. In a follow up meeting the day prior to a competitive match against the team during which the original injury occurred (her most anxiety provoking situation) the client reported the benefits of the intervention,

"Having to describe situations that caused me to be anxious actually was the first step in confronting how I felt. I knew I was anxious about heading the ball but when prompted to think about specific situations I realized how anxious I was." The client described eight anxiety-provoking situations with regard to heading the football and easily organized them according to the intensity of anxiety (lowest to highest) to create a hierarchy. She stated, "Having this plan in front of me showing me when my anxiety was highest gave me goals to work towards. After I was told how the thing [SD] worked I knew where I was going and knew each one would be tackled. Achieving each in small steps, first using my imagination and then actually doing each scene, was a great confidence boost that helped my belief and confidence that the next one would be solved too." The client reported, "By using your imagination first doesn't put you into too threatening a situation either. But you know that the real life scenarios will be tackled soon so the real problem is being dealt with. It's like having this little confidence builder." When asked about re-injury anxiety prior to her first competitive game against the opponents during which her injury occurred she stated, "I'm ready for it. I've imagined the scene of going up for a header against the same girl as the original injury and all I see are clear images of me making good contact with the ball and no injury. I'm confident I can do it because I've seen the images in my head and I've not got injured. Now it's time for me to show I can in tomorrow's game. I've even performed challenged headers in training and in the last few games without worrying about getting re-injured so I know I can." After the game the client reported the benefits of SD again, "It worked. Did you see me? Banging headers all over the park I was."

Concluding Remarks

Preliminary studies (e.g., Draper & Ladd, 1993; Gould *et al.*, 1997; Walker *et al.*, 2002) have demonstrated that re-injury anxiety is a common emotional response

associated with athletic injury. Researchers have suggested that re-injury anxiety could impact performance during rehabilitation and on return to competition, and increase the risk of actual re-injury through attentional changes and muscular tension. Although some studies have used the term fear of re-injury, we feel that a more appropriate term is re-injury anxiety. The terminology used by athletes describing their emotional responses to injury is more synonymous with anxiety than fear (e.g., worried, nervous). There is no certainty regarding re-injury and usually no actions of escape as a consequence, hence re-injury thoughts are more related to anticipation of what might happen, a factor associated with anxiety as opposed to fear. Fear is a fundamental biological mechanism, whereas anxiety is composed of different parts and this is evident in re-injury thoughts identified within preliminary research (e.g., Walker *et al.*, 2002) where athletes experience cognitive and somatic symptoms of anxiety. Re-injury concerns are more typical of anxiety because they result from previous experience and other developmental factors and are therefore not biological or fundamental as when fear is experienced. Preliminary studies (e.g., Cupal & Brewer, 2001) have demonstrated the application of psychological interventions to assist athletes to cope with re-injury anxiety. However, such findings have been unable to utilize a valid or reliable assessment tool capable of measuring re-injury anxiety. Given the suggested implications of this emotional response to injury on rehabilitation performance, performance upon re-entry and increasing the likelihood of actual re-injury, addressing re-injury anxiety can only help in the athlete's holistic recovery from injury.

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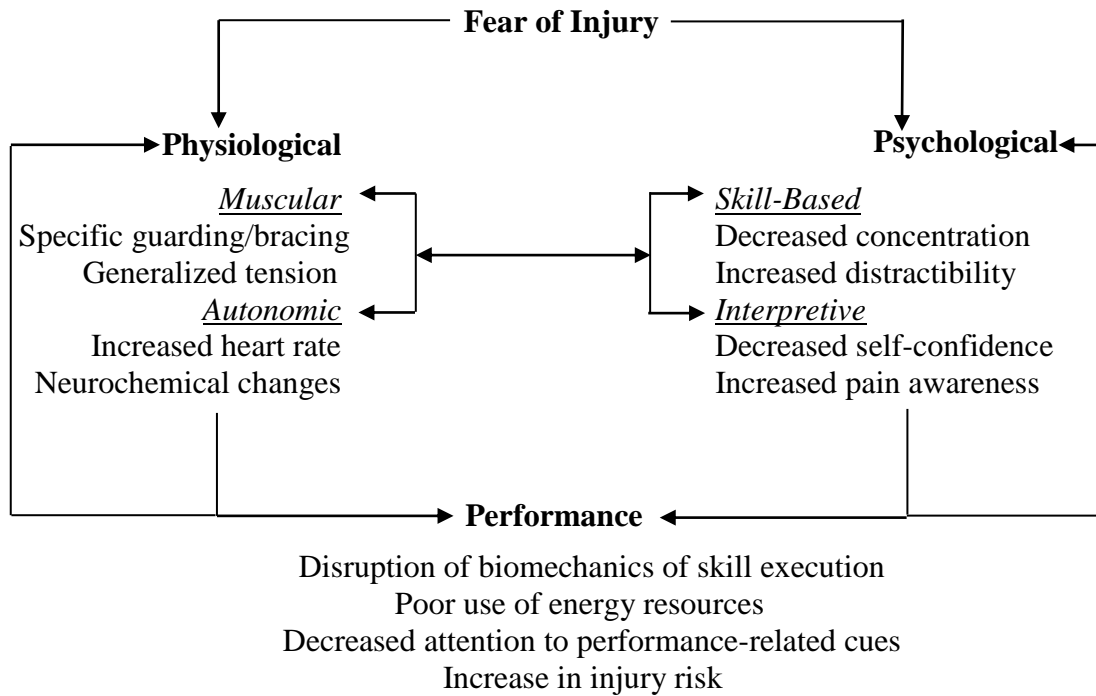
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Figure 6.1

Psychophysiological Mechanism of Risk¹



¹ From *Psychology of Sport Injury* (p. 7), by J. Heil, 1993, Champaign IL: Human Kinetics. Copyright 1993 by John Heil. Reprinted with permission.

Table 6.1

Anxiety hierarchy for elite female soccer player

Anxiety-Provoking Situation	Anxiety Rating
Heading a ball that I have thrown in the air.	0
Heading a ball that someone else has thrown in the air.	1
Heading a ball with a teammate standing next to me.	3
Heading a ball with a teammate jumping up next to me but not challenging for the ball.	5
Heading a ball with a teammate challenging.	7
Heading a ball with a member of the opposition standing next to me.	8
Heading a ball with a member of the opposition challenging.	9
Heading the ball with the same opposing player challenging as when the original injury occurred.	10