18 Role of Emotions in Sport Injury

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Theoretical Considerations

When asked about his injury, one of the greatest basketball players of all time, Michael Jordan, famously stated: "My body could stand the crutches, but my mind couldn't stand the sideline" (Stiller, 2015). Although the quote highlights the significance of psychological factors in sport injury rehabilitation, existing theories posit that emotions play a role much earlier in the sport injury process. The stress and injury model (Andersen & Williams, 1988; Williams & Andersen, 1998) highlights the role of emotions (e.g. anger, anxiety, frustration and other unpleasant states) as a potential antecedent to injury. According to this model, an individual's personality coupled with their history of stressors, coping resources, in addition to their use of psychological interventions, can have an impact on their response to a stressful situation. This response, cognitive and/or physiological, which is often associated with pleasant or unpleasant emotions, has the potential to increase the likelihood of sustaining an injury. Similarly, the biopsychosocial model of stress and athletic injury and health (Appaneal & Perna, 2014) suggests that negative life stress and associated emotional distress (psychological factors) have the potential to influence injury occurrence though the activation of the autonomic nervous system (ANS) response pathways (Appaneal & Perna, 2014).

Support for the above is somewhat equivocal. It is known that a number of personality factors can amplify the risk of encountering a sport injury: locus of control (Plante & Booth, 1997), competitive trait anxiety (Ford, Eklund, & Gordon, 2000), and perfectionism (Krasnow, Mainwaring, & Kerr, 1999). Equally, a history of life stressors (Patterson, Smith, & Everett, 1998), daily hassles (Fawkner, McMurray, & Summers, 1999) and inadequate coping resources (Maddison & Prapavessis, 2005) have also been shown to influence injury occurrence.

The role of emotions in injury occurrence is yet to receive a substantial amount of attention in the literature. To date, negative mood states such as competitive anxiety (e.g. Lavallee & Flint, 1996) and anger (Thompson & Morris, 1994) have been found to influence injury occurrence. It is also known that negative mood states collectively (e.g. anger, confusion, depression, fatigue,

and tension) have also been found to be significantly related to injury occurrence (Galambos, Terry, Moyle, Locke, & Lane, 2005; Lavallee & Flint, 1996).

Much like the pre-injury models, the post-injury theoretical conceptualisations also recognise the importance of emotions as part of the injury rehabilitation and return to participation process. In particular, the literature has demonstrated that emotions can affect the injury process on a cellular level; unpleasant emotions are known to suppress our immune system, while pleasant emotions strengthen it (e.g. Davidson et al., 2003). Emotions are also known to play a role in individual's biopsychosocial reactions to: the injury, the rehabilitation, the psychosocial and physical rehabilitation outcomes, and the return to participation (Brewer, 1994; Brewer, Andersen, & Van Raalte, 2002; Heil, 1994; Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). Indeed, the early research on psychological responses to injury focused mainly on emotions as key psychological consequences of injuries. Adapted from the grief-response literature (Kübler-Ross, 1969), psychological rehabilitation from injuries was seen as a grief-response to a loss (Heil, 1994), and consisted of three main stages: distress (including shock, anger, bargaining, anxiety, depression, isolation, guilt, humiliation, preoccupation, and helplessness), denial (including a sense of disbelief and a failure to accept the severity of injury to varying degrees), and determined coping (including injury acceptance to varying degrees and its impact on short-term and long-term goals).

While clinically appealing, the solely emotion-based stage-like models have received very little direct support in the literature (Walker & Heaney, 2013), and have since been absorbed into more cognitive-affective-behavioural models, thus taking into account potential individual differences in responses to injury.

The most commonly used theoretical model to date, the integrated model of psychological response to sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998) combined the existing pre- (i.e. Williams & Andersen, 1998) and post- (Brewer, 1994; Heil, 1994) injury models. The integrated model posits that a range of pre-injury factors, including stress-related unpleasant emotions, can have an impact on the ways in which an individual will appraise the injury and the resultant situation, which in turn will trigger a range of emotional responses (e.g. distress, denial, frustration) and behavioural responses (e.g. use of social support, under/or over-adherence with rehabilitation). Known as the dynamic core, these cognitive appraisals, emotional, and behavioural responses are influenced by a number of personal and situational factors, and typically interact in a two-directional cyclical manner (Wiese-Bjornstal et al., 1998). This dynamic, bi-directional and cyclical process of cognitive appraisals, emotional, and behavioural responses can lead to an upward spiral towards successful coping, or a downward spiral towards unsuccessful coping with the injury and its resultant situation. The interaction between thoughts, emotions, and behaviours are also conceptualised as having a bidirectional effect on the intermediate biopsychological outcomes

(Brewer et al., 2002) as well as the overall physical and psychosocial injury rehabilitation outcomes (Brewer et al., 2002; Wiese-Bjornstal et al., 1998).

Emotional Responses to Injuries

One common consequence of sport injury is a perception of loss, which often leads to a range of unwanted emotional responses. Defined as a feeling experienced when something one has is no longer there (Evans & Hardy, 1995), perceptions of loss can manifest themselves in several different ways. It is not uncommon for an athlete to experience a loss of physical ability, loss of independence, and loss of freedom (Tracey, 2003). Some injured athletes also experience loss over lost social interactions with their team. Being unable to participate in training, practice, and/or competition may isolate or alienate the injured athlete from regular team activities as well as access to social support (Tracey, 2003). Equally, athletes who are able to attend practices while injured are often reminded of their loss of participation and fitness.

Some of the typical emotional responses to the losses experienced following an injury include, but are not limited to, frustration, anger, anxiety, depression, and fear (Arvinen-Barrow, Massey, & Hemmings, 2014; Brewer, 2001; Brewer & Redmond, 2017; Madrigal & Gill, 2014; Tracey, 2003). Defined as a feeling of being upset or annoyed, frustration is an emotion that can build over time, and possibly become a prominent emotion for those athletes who primarily use sport as an emotional outlet (Tracey, 2003). It is also known that athletes, who experience shock and disbelief following an injury, can exhibit feelings of frustration and devastation, mainly due to their perceived inability to change or achieve something (Ruddock-Hudson, O'Halloran, & Murphy, 2014).

Closely associated with frustration, anger is also a common emotional response following an injury. Defined as a normal emotion and characterised by "antagonism toward someone or something you feel has deliberately done you wrong that is associated with a physiological activation of the sympathetic nervous system" (Abrams, 2016, p. 2), anger appears to be one of the most prevalent emotional disturbances following a sport injury. How it manifests itself can be either *internal*, where the person exhibits behaviours typical to depression or withdrawal, or *external*, which often manifests itself as "lashing out", yelling, or physical violence (Abrams, 2016).

Like frustration and anger, feelings of depression have also been known to affect injured athletes, particularly when the rehabilitation does not progress as planned, anticipated, or expected. Indeed many sport medicine professionals report depression as one of the most frequent psychological responses to injuries among athletes who do not cope successfully with their injuries (Arvinen-Barrow, Hemmings, Weigand, Becker, & Booth, 2007; Clement, Granquist, & Arvinen-Barrow, 2013; Heaney, 2006).

The literature also highlights the prevalence of emotional responses to a potential future injury. These cognitive-affective concerns about another

injury to the same area (or another location) are commonly termed re-injury anxiety or having a fear of re-injury (Walker, 2006). Although these terms are used interchangeably in the literature, they are not the same construct, thus, it is important to distinguish them. Re-injury anxiety refers to the cognitive and somatic symptoms that an athlete experiences in anticipation of an ambiguous, uncertain, and existential threat (Lazarus, 2000; Walker, Thatcher, & Lavallee, 2010). In contrast, fear of re-injury refers to a psychosomatic response to an obvious fear-provoking situation, where the certainty of immediate, concrete, and overwhelming physical danger is evident (Lazarus, 2000; Walker et al., 2010). A study by Walker (2006) revealed that athletes experience re-injury anxiety as opposed to fear of re-injury. It is also likely that injured athletes can develop anxieties about missing practices and training, and needing to catch up due to the time lost (Tracey, 2003). These thoughts may evolve into fears about being cut from the team, or being seen as damaged goods.

When an athlete sustains an injury, most believe that the only emotions they will experience are predominately unpleasant and harmful in nature. While this is true, it is imperative to note that each injury experience is unique, and the extent of emotional disturbance will vary depending on the individual, their situation, and the injury itself (Brewer & Redmond, 2017; Tracey, 2003). An emergent body of literature suggests that adverse events such as sport injury can also act as an opportunity for positive change and growth (Howells, Sarkar, & Fletcher, 2017). Known as sport injury-related growth (Roy-Davis, Wadey, & Evans, 2017), sport injury can elicit emotions with both pleasant and unpleasant valence, and both helpful and harmful in their function. What is important is how the injured athlete perceives the said emotions (Roy-Davis et al., 2017). For example, some athletes perceive their time away from sport as a relief, affording an opportunity to direct their effort and attention into academic studies, or learning more about their sport (Wadey, Evans, Evans, & Mitchell, 2011). Being injured also enables the development of one's self-awareness, self-identity, resilience, mental toughness, and social relationships both in and outside of sport (Udry & Gould, 1997; Wadey et al., 2019).

Applied Recommendations

Sport injury rehabilitation is typically viewed as a series of physiological phases (acute, repair, and remodelling) closely aligned to the healing process (Prentice & Arnheim, 2014). Although an effective way to conceptualise the physical injury healing process, this approach lacks consideration of athletes' psychosocial responses – such as emotions – to injuries (Hamson-Utley, 2010). An attempt to rectify this gap in the literature was made by Kamphoff, Thomae, and Hamson-Utley (2013) by proposing that both physical and psychosocial responses to injuries can be broadly divided into three main phases: (1) reaction to injury; (2) reaction to rehabilitation; and (3) reaction to return to play (Kamphoff et al., 2013).

In each of the three phases, the injured athlete is faced with new a reality, and is often required to engage in new behaviours. For example, in reaction to injury phase, the athlete is not able to participate in their sport, but rather has to adapt to new routines in life and in sport. These new routines have the potential to elicit new emotions and thoughts – which can be both pleasant and unpleasant, depending on the person. Consistent with the integrated model (Wiese-Bjornstal et al., 1998), during each of the phases, an injured athlete will appraise the demands of their situation, their available resources, and possible consequences. These cognitive appraisals will then influence the subsequent emotional (e.g. anger, anxiety, depression, excitement, fear, frustration, relief) and behavioural responses (e.g. adherence to rehabilitation), which, depending on the appraisal can be helpful or harmful for injury recovery.

What follows, is a brief discussion of typical emotions associated with each of the three phases (Kamphoff et al., 2013). The section will also provide an outline of psychosocial strategies that can be used with injured athletes to address the identified emotional responses. It must be noted that, thus far, empirical evidence explicitly examining the three phases of rehabilitation and their associated emotions is limited (Clement, Arvinen-Barrow, & Fetty, 2015; Ruddock-Hudson et al., 2014). However, when combined with the psychological responses to sport injury literature as a whole, the findings provide applied practitioners with a starting point from which patient education, awareness, and implementation guidelines can be developed.

Phase 1: Reaction to Injury

The *reaction to injury* phase represents athletes' initial psychosocial responses to their injury (Hamson-Utley, 2010). It is common for these responses to be grounded on the physical signs, symptoms, and consequences of the injury such as swelling, discoloration, muscle spasm, pain, and lack mobility (Kamphoff et al., 2013).

The reaction to injury phase is usually the phase when injured athletes report the greatest amount of mood and emotional disturbance (Tracey, 2003). The phase is characterised by unpleasant emotions such as anger (Udry & Gould, 1997), anxiety and confusion (Tracey, 2003), disbelief and shock (Johnston & Carroll, 1998), and disappointment (Ruddock-Hudson et al., 2014). Some of the most effective psychosocial strategies to address these emotions include providing empathy support, patient education, and the use of deep breathing to effectively manage pain levels (see Table 18.1).

Phase 2: Reaction to Rehabilitation

The *reaction to rehabilitation* commences when the injured athlete begins their rehabilitation. Physically, many of the initial signs, symptoms, and consequences of the injury are decreasing, and the athlete is able to engage in activities to increase their strength, balance, and mobility (Kamphoff et al., 2013).

Table 18.1 Useful psychosocial strategies for reactions to the injury phase

Psychosocial strategy	*Purpose of strategy*	*References*
Empathy support	Providing empathy support in the form of understanding and recognising the injured athlete's situation rather than trying to solve the problem can be a beneficial way to establish better therapeutic alliance with the injured athlete as well as positively affect the treatment outcomes.	Hsu et al. (2012); Neumann et al. (2009)
Patient education	Providing appropriate patient education after injury onset has been shown to increase injured athletes' self-efficacy, inclination to listen to their sport medicine professionals' recommendations, use of psychological strategies, and overall rehabilitation outcomes.	Louw et al. (2011); Schrieber and Colley (2004); Wiese et al. (1991)
Deep breathing	Deep breathing can be used to effectively manage pain levels by increasing the flow of oxygen throughout the body, alleviating muscular tension and aiding in the release of endorphins.	McCaffery and Pasero (1999); Taylor and Taylor (1997)

This engagement in new behaviours will elicit a number of new psychosocial (thoughts, emotions, and behaviours) responses, typically related to the rehabilitation activities and any associated physiological responses. The initial feelings of anger, devastation, disbelief, shock, and upset (Clement et al., 2015; Ruddock-Hudson et al., 2014) are starting to lessen, both in intensity and in frequency. Existing evidence suggest that the most predominant unpleasant emotion during the reaction to rehabilitation phase is frustration (Clement et al., 2015), and that this can coexist with a "roller coaster" of pleasant and stress-related emotions (Ruddock-Hudson et al., 2014). Some of the most effective psychosocial strategies to address this "roller coaster" of emotions include emphatic listening support, patient education, and goal setting (see Table 18.2).

Phase 3: Reaction to Return to Play

The *reaction to return to play phase* refers to the rehabilitation phase when the injured athlete is starting to make plans to return to sport. Physically, the

Table 18.2 Useful psychosocial strategies for reactions to the rehabilitation phase

Psychosocial strategy	*Purpose of strategy*	*References*
Emphatic listening support	Emphatic listening can help practitioners better understand injured athlete's situation, which can help determine next treatment approaches and therefore help alleviate frustration and other unpleasant/ harmful emotional responses.	Braaf et al. (2018); Jamieson et al. (2006)
Patient education	Providing appropriate injury education (by qualified sport medicine professionals) about the injury signs, symptoms, prognosis, rehabilitation protocol, and progress can help alleviate frustration and other unpleasant/harmful emotional responses.	Pegg et al. (2005); Russell and Tracey (2011); Sabo (2013)
Goal setting	Setting appropriate goals with the injured athlete and involving them in the rehabilitation planning can provide structure and realistic goals for the rehabilitation and enhance injured athlete's sense of self-determination.	Beneka et al. (2007); Carson and Polman (2017)

athlete continues to make increases in strength, balance, and mobility, and the rehabilitation protocols start to incorporate sport specific activities (Hamson-Utley, 2010).

Psychosocially, athletes in this phase typically react to challenges associated with both setbacks and performance gains in both the healing process and with their actual return to sport participation (Kamphoff et al., 2013). It is common for athletes to report both pleasant and unpleasant emotions about their return to sport, as well as perceive emotions as helpful and/or harmful. Thus far, research has identified "mixed emotions" during the return to play phase. Athletes in the USA and Australia have identified feeling both excitement and re-injury anxiety (Clement et al., 2015) and excitement and nervousness/anxiety (Ruddock-Hudson et al., 2014) when discussing emotions related to return to sport. To help injured athletes better cope with the emotions associated with the return to play phase, some of the most effective psychosocial strategies include deep breathing, self-talk, and imagery (see Table 18.3).

Table 18.3 Useful psychosocial strategies for reactions to the return to play phase

Psychosocial strategy	*Purpose of strategy*	*References*
Deep breathing	Deep breathing can have a positive effect on mood states and reduce harmful emotional responses. Deep breathing can help reduce somatic symptoms typically associated with both excitement and anxiety, such as physical tension, heart rate, and respiratory rate.	Hayama and Inoue (2012); Hunt et al. (2018); Malathi and Damodaran (1999)
Imagery	Imagery can be beneficial for the injured athletes by helping them visualise successful recovery, decrease re-injury anxiety, increase motivation, and facilitate better rehabilitation adherence.	Cupal and Brewer (2001); Hamson-Utley and Vazques (2008); Monsma et al. (2009)
Self-talk	Self-talk can help injured athletes to reframe any harmful self-dialogue as well as help the injured athlete to improve self-confidence and decrease anxiety.	Clement et al. (2015); Theodorakis et al. (1998)

Conclusions

This chapter presented readers with a brief introduction to the theoretical, empirical, and applied evidence to date as it relates to role of emotions in sport injury occurrence, rehabilitation, and return to participation process (for a review, see Brewer & Redmond, 2017). Based on existing evidence to date, emotions are a complex biopsychosocial antecedent to, and consequence of, sport injury. Typical emotional responses to injuries are unpleasant and/or harmful in nature, but a number of pleasant and helpful emotions have also been discussed in the literature. It is also common for injured athletes to feel myriad emotions simultaneously, as well as see fluctuations in emotions across the whole rehabilitation process. There are a number of psychosocial strategies that can be used to address emotional responses to sport injuries; however, in the absence of solid empirical evidence, this should be done with caution.

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