Psychological Effect of Injury on the Athlete: A Recommendation for Psychological Intervention

By Shelly Sheinbein, MS

At one time or another during their sporting or competitive activities, many athletes may suffer an injury that keeps them from participating for the duration of their recovery. If you have been lucky enough to train without significant injury, it is still likely that you know someone who has had an injury that requires some duration of professional rehabilitation before they can train normally again. These serious injuries and rehabilitation are often accompanied by lingering psychological consequences which can impact the athletes' well-being as well as their likelihood of returning to sport.

In the United States there are an estimated seven million sport and recreation-related injuries per year (1), not including sport injuries that may go unreported, such as sprains and concussions. According to the National Sporting Goods Association, 521,578 people were treated for bicycle related injuries. Additionally, 83% of amateur or competitive runners experience knee, ankle, and foot injuries which can hinder their quality of life temporarily or definitively (2). Despite efforts to reduce the prevalence of injuries with advancements in sporting equipment, coaching techniques, and sport-specific conditioning, sport and recreational injuries continue to increase over time (1).

When athletes are injured they experience a range of emotions which are frequently more debilitating when they require longer rehabilitation. For instance, Marcus Lattimore, a record-setting freshman of the year tailback and Heisman contender for University of South Carolina suffered a series of sport injuries including a torn Anterior Cruciate Ligament (ACL), dislocated kneecap, torn ligaments and nerve damage. Despite countless surgeries and rehabilitation he was chosen in the fourth round by the San Francisco 49ers. However, after only a few days of practice he decided to give up football due to pain and lack of confidence in his knees ability to function at the same level he had previously. There are many athletes ranging from novice to professional level and across a wide range of sports and recreational activities, who have suffered career ending injuries and can relate to experiencing psychological distress including re-injury anxiety (3), depressive symptoms (4), and loss of athletic identity (5) long after they're physically recovered. In this brief article, I will examine common psychosocial responses to injury and describe several empirically supported psychological interventions which have effectively reduced emotional distress, as well as improved physical and mental outcomes for injured athletes.

Reinjury Anxiety

Reinjury anxiety is one of the most common psychological reactions experienced by injured athletes (6), as well as the most commonly cited reason presented by athletes for not returning to sport post ACL surgery (7). Reinjury anxiety or fear of reinjury, both used synonymously within the sport injury literature, is defined as an irrational and debilitating fear or anxiety that physical movements will result in painful reinjury (1). In a sample of 49 recreational-level athletes (Mage = 29.15 years) who had undergone ACL surgery one year prior, Tripp et al. (1) found that athletes' experiencing high reinjury anxiety reported having lower confidence in their ability to return to sport ($p < .01$). Relatedly, in a sample of 62 athletes (32 men, 28 women ages 18 to 37 years) who underwent ACL surgery three to four years prior, athletes reporting high fear of reinjury also reported their knees not functioning as well as they did prior to their injury ($p < .05$) (3).

Whereas previous research examining reinjury anxiety has focused on athletes who received ACL reconstruction surgery, several researchers have speculated that fear of injury is always present among athletes especially following a serious injury (1). One can easily imagine an athlete struggling with reinjury anxiety after a myriad of sport and physical activity related injuries. For instance, a swimmer who has gone through shoulder surgery may feel anxious about returning to intense training or competition or a cyclist who suffered a serious accident while riding may feel hesitant about riding on the street and therefore ride with hesitance and less frequency.

Reinjury anxiety is associated with psychological changes including diminished concentration and self-confidence, as well as increase in distractibility and pain awareness (6, 8). In addition, reinjury anxiety may also cause physiological changes including over arousal evident through increased heart rate, generalized muscular tension, and guarding the injured site (9). Thus, an athlete who fears reinjury tends to develop a lack of trust in the injured site which can produce hesitance in performance during rehabilitation and when returning to training and competition. Athletes' awareness of their substandard performance can then lead to decrease in coordination, muscle tension, and bracing or splinting which are suggested to increase actual reinjury occurrence (9). Overall, both psychological and physiological responses to reinjury anxiety contribute to athletes falling into a cycle of inactivity that may lead to reductions in body strength and flexibility, and can result in athletes experiencing greater pain when active, thereby reinforcing the reinjury anxiety that perpetuates continued avoidance.

Psychological Distress

In addition to reinjury anxiety, athletes can experience depressive symptoms following injury (4). The severity of the depressive symptoms can vary based on the injury, limits to mobility, length of rehabilitation, and delay in the athlete returning to sport or physical activity. Depressive symptoms can arise soon after the injury which could be associated with frustrations due to immobility, difficulties participating in everyday activities, and feelings of injustice and shock associated with the injury. Depressive symptoms can also have a delayed onset and could be associated with feeling socially isolated, loss of skills or opportunities, and overall absence from participating in training or competition which can contribute to loss of athletic identity (10). Thus, an athlete who requires surgery following sport injury may be more vulnerable to depressed mood than an athlete who has less severe sport injuries because of the delay in returning to play (1).

Additionally, athletes who report experiencing somatic symptoms (e.g., physical aches and pains associated with psychological distress) prior to injury could impact the length of their recovery time. For instance, it took 20 days for 80% of patients with somatic symptoms to recover from a concussion; whereas it took 10

Athletes' willingness to commit to rehabilitation, as well as the value they give to the rehabilitation process, influences their cognitive, emotional, and behavioral reactions to injury rehabilitation

days for 80% of patients without prior physical symptoms (11). This research highlights that healthier minds tend to recover quicker from concussions therefore addressing mental health concerns, such as depressive symptoms, prior to injury could impact the recovery time required following a serious injury. Although research has not explicitly examined depressive symptoms prior to or following injuries commonly experienced by endurance athletes, such as pulled muscles, sprains, or shoulder injuries, one could predict that endurance athletes are also at increased risk for developing mental health concerns, such as depressive and anxiety symptoms, following injury especially a career ending injury.

Impact on Rehabilitation

Athletes' willingness to commit to rehabilitation, as well as the value they give to the rehabilitation process, influences their cognitive, emotional, and behavioral reactions to injury rehabilitation (12). Thus, the way athletes perceive their injury rather than the fact that the injury occurred has a critical role in understanding athletes' emotional responses, such as depression, reinjury anxiety, and grief. Johnston and Carroll (12) observed that athletes who reported a high fear of reinjury also had certain behavioral responses, including but not limited to being hesitant, not giving 100% effort, and being wary of injury-provoking situations (e.g., during rehabilitation and in sporting contexts). They also found that athletes who positively appraised their injury rehabilitation (e.g., viewed their injury as manageable) reported feeling happiness and relief, which fostered increased adherence to rehabilitation. In contrast, athletes who negatively appraised their injury rehabilitation (e.g., viewed their injury as causing stress) reported feeling frustration, which led to hesitancy and cautiousness toward completing exercises in their rehabilitation program. Further, in 2008, Carson and Polman (13) found that during rehabilitation injured athletes tended to seek more emotional support from the staff in charge of rehabilitation as opposed to family. Injured athletes may find that emotional and informational support from athletic trainers, physicians, or professionals familiar with the rehabilitation process is more helpful for managing stress associated with their injury compared to what is offered by family and significant others (14).

Recommended Psychological Interventions

Few medical professionals are aware of the psychological interventions which have helped athletes cope with the mental consequences of injury, including setting and adjusting goals during the rehabilitation process and imagery paired with diaphragmatic breathing intended to induce relaxation (15, 16). Goals can be defined as attaining a specific level or proficiency on a task, usually within a specified time period. Podlog and Eklund (7) found that among 12 elite athletes interviewed over a six to eight month period, the injured athletes who adjusted their goals based on their rate of progress during the rehabilitation process reported feeling more successful during their return to sport compared to the injured athletes who did not adjust their goals (7). The majority of successful goal setting interventions included setting goals that provide structure, steps, and motivation for achieving specific milestones in injured athletes' rehabilitation, and customizing the goals to fit the individual's needs (17). Additionally, some researchers have begun exploring the impact of mindfulness, a type of meditation focusing on the breath, being in the present moment, and remaining non-judgmental of any thoughts, or feelings that arise during the course of the meditation, on helping athletes with pain, stress and anxiety management, and focus (17). Additionally, integrating self-compassion exercises holds promise in helping athletes address self-critical thoughts, stress and anxiety, as well as difficulties with focus and pain which tend to arise following injury.

Further, imagery is a psychotherapeutic intervention defined as creating sensory rich images within one's mind (18). Within medical contexts, researchers have conducted interventions where relaxation imagery (e.g., imagining a peaceful place) and motivational imagery (e.g., imagining a medical procedure

continued on page 10

The injured athletes who adjusted their goals based on their rate of progress during the rehabilitation process reported feeling more successful during their return to sport compared to the injured athletes who did not adjust their goals.

continued from page 9

or treatment being successful) is often paired with diaphragmatic breathing to help individuals cope with cancer (19), fibromyalgia (20), and tension induced headaches (18).Within sport, motivational imagery paired with diaphragmatic breathing is frequently used by athletes, coaches, and sport psychologists to enhance skill acquisition and recently cognitive specific imagery (e.g., imagining oneself successfully performing in game situations and in the situation in which they had previously been injured) has shown to be effective in reducing injured athletes re-injury anxiety, experience of pain, and improving speed of physical healing (15, 16). For instance, Evans et al. (21) interviewed three rugby players in their mid-twenties who had undergone surgery to repair a sport-related injury (i.e., dislocated shoulder, fractured fibia and tibia, or torn ACL). Each participated in a minimum of three months of rehabilitation and they completed daily self-reflection diaries that provided information for the consultations, and practiced cognitive specific imagery over the course of three months. Their results indicated that the imagery intervention was associated with reduced reinjury anxiety, and increased confidence in overall level of fitness and in returning to sport (21).

Conclusions

For many endurance athletes getting injured is a normal part of the sport which may require a few weeks of working with a physical therapist or at most a short break from participation. However, when the injury is more serious and requires surgery it can quickly become a distressing setback, an event often appraised as impeding progress toward desired goals and for some ending their athletic career. Athletes who have suffered serious injury can likely relate to the psychological consequences discussed in this article and would have benefitted from receiving a psychological intervention, such as goal setting, imagery, or mindful self-compassion following their injury. Athletes with prior mental health concerns, as well as athletes requiring surgery and a greater absence from participation in sport or physical activity are at greater risk for experiencing lingering mental health concerns following their physical recovery and should be encouraged to seek services from sport psychologists or sport consultants certified through the Association of Applied Sport Psychology (AASP).

Shelly Sheinbein is a doctoral intern at Northwestern University Counseling and Psychological Services. She will receive her PhD in Counseling Psychology with a specialization in Sport Psychology from the University of North Texas by August 2017. Her research focuses on examining the impact of psychological interventions on athletes' physical and mental recovery following serious sport injury. Shelly is a former NCAA Division III women's lacrosse player and has completed several marathons and speed triathlons.

REFERENCES

1. Tripp DA, Stanish W, Ebel-Lam A, Brewer BW, Birchard J. Fear of reinjury, negative affect, and catastrophizing predicting return to sport in recreational athletes with anterior cruciate ligament injuries at 1 year postsurgery. *Sport Exerc Perform Psychol* 2011; 1(S):38-48.

2. Bredeweg SW, Klitenberg B, Bessem B, Buist I. Differences in kinetic variables between injured and noninjured novice runners: a prospective cohort study. *J Sci Med Sport* 2013; 16(3):205–210.

3. Kvist J, Ek A, Sporrstedt K, Good I. Fear of re-injury: A hindrance for returning to sports after anterior cruciate ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc* 2005; 13:393-397.

4. Mainwaring LM, Bisschop SM, Comper P, Hutchison M, Richards DW. Emotional response to sport concussion compared to ACL injury. *Brain Injury* 2010; 24(4):589–597.

5. Clement D, Arvinen-Barrow M, Fetty T. Psychosocial responses during different phases of sport-injury rehabilitation: a qualitative study. *J Athl Train* 2015; 50(1):95-104.

6. Tripp DA, Ebel-Lam A, Stanish W, Brewer BW, Birchard J. Fear of reinjury, negative affect, and catastrophizing predicting return to sport in recreational athletes with anterior cruciate ligament injuries at one year postsurgery. *Rehabil Psycho*l 2007; 52(1):74-81.

7. Podlog L, Eklund RC. High-level athletes' perceptions of success in returning to sport following injury. *Psychol Sport Exerc* 2009; 10(5):535-544.

8. Poulsen M, Fabrin J, Carstensen JP, Ulnits L, Lausten GS. Reconstruction of anterior cruciate ligament using bone-patellar tendon bone graft or fascia lata graft. A retrospective study of functional results. *Ugeskr Laeger* 2003; 165(7):682-5.

9. Walker N, Thatcher J, Lavallee D. A preliminary development of the re-injury anxiety inventory (RIAI). *Phys Ther Sport* 2010; 11(1):23-29.

10. Thing LF. The resumption of non-professional female players' sports career after anterior cruciate ligament injury. The female player's dilemma: is she willing to run the risk? *Scand J Med Sci Sports* 2006: 16(5):364-375.

11. Ossola A. Healthier minds recover from concussions quicker (April 2016). Retrieved from http://www.popsci.com/people-recover-faster-from-concussions-if-they-were-psychologically-better-beforehand.

12. Johnston LH, Carroll D. The context of emotional responses to athletic injury: a qualitative analysis. *J Sport Rehabil* 1998; 7:206-220.

13. Carson F, Polman R. ACL injury rehabilitation: a psychological case study of a professional rugby union player. *J Clin Sport Psychol* 2008; 2:71-90.

14. Yang J, Peek-Asa C, Lowe JB, Heiden E, Foster DT. Social support patterns of collegiate athletes before and after injury. *J Athl Train* 2010; 45(4):372.

15. Cupal D, Brewer B. Effects of relaxation and guided imagery on knee strength, reinjury anxiety, and pain following ACL reconstruction. *Rehabil Psychol* 2001; 46(1):28-43.

16. Maddison RR, Prapavessis HH, Clatworthy MM, Hall CC, Foley LL, Harper TT, Brewer BB. Guided imagery to improve functional outcomes post-anterior cruciate ligament repair: randomized-controlled pilot trial. *Scand J Med Sci Sports* 2012; 22(6):816-821.

17. Mosewich AD, Crocker P, Kowalski KC. Managing injury and other setbacks in sport: experience of (and resources for) high-performance women athletes. *Qualit Res Sport Exerc Hlth* 2014; 6(2):182-204.

18. Abdoli S, Rahzani K, Safaie M, Sattari A. A randomized control trial: the effect of guided imagery with tape and perceived happy memory on chronic tension type headache. *Scand J Caring Sc*i 2012; 26(2):254-261.

19. Liossi C, Hatira P. Clinical hypnosis versus cognitive behavioral training for pain management with pediatric cancer patients undergoing bone marrow aspirations. *Int J Clin Exp Hypn* 1999; 47:104-116.

20. Menzies V, Taylor AG, Bourguignon C. Effects of guided imagery on outcomes of pain, functional status, and self-efficacy in persons diagnosed with fibromyalgia. *JACM* 2006; 12(1), 23-30.

21. Evans L, Hardy L, Fleming S. Intervention strategies with injured athletes: an action research study. *Sport Psychol* 2000; 14(2):188-206.