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THE EMOTIONAL ROLLER COASTER OF INJURY: A CASE SERIES

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ABSTRACT

Athletic injuries can be extremely distressing, even traumatizing, for athletes; however, reactions to injury can vary. Depending on the timing of an injury, the perception of it may be very different. An injury can take away an athlete's career at any given time and, more importantly, it can take away his or her identity. Long recovery times may have a greater impact on the athlete's mood, emotions, sense of identity and overall psychological well-being. Without successful emotional rehabilitation, total recovery is incomplete and return to pre-injury level and overall performance is hindered. The purpose of this paper is to expand the current literature by examining changes in mood over time as well as exploring emotions and reactions to injury following several weeks and months of injury rehabilitation. Additionally, this paper will longitudinally describe the phenomenon as experienced by three collegiate athletes. Participants completed a sports injury questionnaire, weekly check-in sheets, and a follow-up interview. Findings showed mood variations throughout months of rehabilitation with "frustration" as the top-ranked emotion by all three athletes. Six major categories emerged qualitatively from the athletes reflecting back on their injury experience.

Key Words: sports psychology, injury recovery, athletes, psychological responses to injury





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Maybe my football days are over. My shoulder heals very fast, but my mind is a mess. I sit around in my bedroom and have panic attacks. I scribble in my journal, trying to exorcise the demons, summon the angels, build future mental stairways. I watch the 49ers on TV all year with a new appreciation of the machine. For the first time I'm seeing the big picture through the small screen, said Nate Jackson, former 49er practice squad player and Denver Bronco (Jackson, 2013, p.22).

One of the most emotionally traumatic events that can happen to an athlete is to experience a serious injury (Petrie, 1993). Injuries can threaten an athlete's career as well as increase life-stress; create fear of re-injury or fear of not performing to pre-injury level; and creates a sense of loss, negative emotions and mood disturbances (Ardern, Taylor, Feller, & Webster, 2013; Naoi & Ostrow, 2008; O'Connor, Heil, Harmer, & Zimmerman, 2005; Podlog, Dimmock, & Miller, 2011).

Injuries can be distressing, even traumatizing, for athletes; however, reactions to injury can vary. Some athletes view it as a disaster, some see it as an opportunity to show courage, and others see it as a relief from the drudgery of practice or frustration with poor performance (Williams, Rotella, & Heyman, 1998). Often athletes enter what some researchers have described as an "identity tunnel," meaning their entire identities are engrossed in and revolve around sport, and their self-worth is determined by their athletic performance. Athletic success or failure significantly impacts self-esteem, motivation, and self-worth for those athletes with a strong athletic identity. Consequently, athletes with a strong athletic identity are more likely to feel a major loss and

experience significant mood disturbance with an injury (Christino, Fantry, & Vopat, 2015; Santi & Pietrantonio, 2013). One study revealed some athletes changed their athletic identity, particularly those with slow and difficult recoveries, as a means of protection (Brewer & Cornelius, 2010). Also, depending on the timing of the injury, the perception of the injury may be very different. One study reported that some athletes initially thought of the injury as a learning opportunity, while others saw it as a threat to their athletic career or self-identity. This was dependent on the timing of the injury (Grindstaff, Wrisberg, & Ross, 2010).

Previous research has examined the emotional responses and how appraisal of the injury influences the emotional response, but few studies have explored the psychological impact the injury has on an athlete throughout a long recovery period (beyond a couple months). Leddy and colleagues (1994) investigated the emotional consequences of injury among male collegiate athletes, but only assessed this immediately after the injury occurred and at a two-month follow-up. They concluded there was mood disturbance (depression, anxiety and lower self-esteem) during the initial phase of injury and at two-months follow-up (Leddy, Lambert, & Ogles, 1994). Similarly, Udry and colleagues (1997) concluded that athletes demonstrated fluctuations in mood early in the injury recovery stage; therefore, they noted working with athletes during this time is invaluable (Udry, Gould, Bridges, & Beck, 1997).

Furthermore, Morrey and colleagues (1999) followed athletes with ACL injuries for six months and found they experienced mood changes throughout rehabilitation. The researchers discovered greater mood disturbances in competitive athletes compared to recreational athletes. This mood disturbance was present at two weeks and two months after surgery (Morrey, Stuart, Smith, & Weise-Bjornstal, 1999). Moreover, studies reveal perceptions of injury changed over time. Coaches and teammates influenced the emotional response of the athlete to his/her injury while emotions varied and were characterized by feelings of loss, frustration, anger, and decreased self-esteem (Granito, 2001;

Tracey, 2003). Additionally, one recent study concluded that athletes who returned to sport reported higher self-esteem than those not returning (Christino, Flemming, Machan, & Shalvoy, 2016).

Attention to the psychological aspects underpinning the recovery process of injury is crucial not only for the well-being of the athlete, but also for its impact on the athlete's rehabilitation and subsequent return to training and competition (De Heredia, Munoz, & Artaza, 2004). Previous studies investigating ACL reconstruction report that many athletes never accomplish pre-injury skill level, and the return to sport rates are not as impressive as one might expect. These studies also report fear of re-injury as a determining factor in the return to sport (Ardern, Webster, Taylor, Feller 2011; Christino, Flemming, Machan, & Shalvoy, 2016; McCullough et.al, 2012).

Few studies have examined mood changes that occur throughout rehabilitation during the later phases of a long recovery (more than one or two months). Also, seldom have studies looked at the return-to-sport experiences of prolonged injured athletes. Therefore, the purpose of this paper is to expand the literature by examining changes in overall mood as well as exploring emotions, and reactions to injury following several weeks and months of injury rehabilitation. Additionally, this paper will longitudinally describe the phenomenon as experienced by three collegiate athletes.

METHOD

PARTICIPANTS

The participants were male (n=1) and female collegiate athletes (n=2) from a Division I university in the western United States, and all athletes had been participating in their sports for over 10 years. Sustaining an injury that required surgery as part of recovery and sidelined the athlete for a minimum of eight weeks was the criteria for inclusion in this case study. Although not required for inclusion, injuries sustained were all to the lower leg and not common injuries.



Specifically, Athlete 1 (male baseball player) tore the articular cartilage from his lateral femoral condyle in his knee; Athlete 2 (female soccer player) had chronic bilateral compartment syndrome and nerve release in both lower legs; Athlete 3 (female track & field/cross country runner) had bone spurs on her Achilles tendon. Athlete 1 was unique in this group in that he injured his knee three times during his college career (same specific injury twice). He first injured his knee during his sophomore year at a community college. At that time, he dislocated his knee-cap and did not require surgery. During summer ball, just prior to starting his first year at the university as a junior, he injured his knee again (torn articular cartilage). He had surgery and went through nine months of rehabilitation before he was released to play summer ball. Upon returning to campus in the fall, after a successful summer season, he again re-injured his knee (torn articular cartilage). He opted for the arthroscopic surgery because although it would not repair his injury, it would give him the best shot at playing again. Therefore, data from Athlete 1 overlap the timing of data from Athlete 2 when focusing on his most recent injury. Data also overlap the timing of Athlete 3 when focusing on the overall injury picture including his original cartilage tear.

PROCEDURE

Purposeful selection was used in this study. The school athletic training department saw all three athletes immediately following their injuries. Each athlete underwent surgery and endured a lengthy recovery. Each athlete completed an informed consent, a sports injury questionnaire, weekly check-in sheets, and a follow-up interview approximately six months after competition ceased.

Athletes were at different points in their rehabilitation during data collection. Athlete 1 completed the sports injury questionnaire five weeks after surgery for re-tearing the articular cartilage; Athlete 2

completed the questionnaire four weeks after surgery and Athlete 3 completed the questionnaire 44 weeks after surgery.

MEASURES

Each athlete completed a sports injury questionnaire, which gathered information on the athlete and the injury. Specifically, the questionnaire assessed the sport played, length in sport, and when the injury occurred relative to the competitive season. It also assessed current emotions, stressors, and fears. Athletes were asked to rate several emotions (e.g., angry, helpless, depressed, relieved) on a scale of one-10. One represented a weak experience of that emotion while 10 represented a strong experience.

The information from the questionnaire provided insight specific to the injury, but also gave a snapshot of how the athlete was feeling at that time. Additionally, athletes completed weekly check-in sheets assessing mood on a daily basis, salient emotions, fears and thoughts relative to rehabilitation, sport, and quality of life. Each week athletes were asked to report any prominent emotions that surfaced, and they were each asked to rate their overall mood on a daily basis using a scale from one-10, with one indicating a low or bad mood and 10 indicating a high or good mood.

For example, the check-in sheet, which was designed like a monthly calendar, included things such as “thoughts about PT,” “fears,” and “emotions felt,” which allowed the athlete to record prominent or noticeable reactions each day. The check-in sheets, used for tracking, provided insight into possible explanations for changes seen over time based on the information recorded by each athlete. Finally, each athlete also completed a follow-up interview approximately six months following the completion of his or her college athletic career. All three participants completed the follow-up interview via email. The researcher designed both measures and developed the interview questions. University IRB approval was obtained for this study.

DATA ANALYSIS

Each athlete was treated as a case study. Data from the sports injury questionnaire, check-ins, and the follow-up interviews were used. Data from the interviews were read and analyzed based on phenomenological reflection and grounded theory, and a cross-case analysis was used in reporting. This approach focuses on how individuals make sense, retrospectively, of their experience with a phenomenon, and use of reflective analysis (Gall, Borg, & Gall, 1996). This requires thoroughly and methodologically capturing and describing how people experience a given phenomenon- “how do they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with others” (Patton, 2002, p.104). Therefore, the researcher takes an in-depth look at the three athletes’ “reality” as they know it to gain insight and understanding to this phenomenon (Leedy, 1997). Reflective analyses of the case studies are the description and evaluation of the studied phenomenon based on the judgment and intuition of the researcher.

CODING PROCEDURE

Central to grounded theory is the continual process of examining the data, comparing codes and categories, and comparing emerging themes until the data has reached theoretical saturation (Strauss & Corbin, 1998). Analyzing the data began with open coding, which is the progression of identifying concepts within the data. Phenomena are essential ideas in the data that represent concepts. These phenomena are categorized together to form overall themes. Thus, this process is repeated until saturation of the data occurs.

All information obtained from the retrospective interviews were coded. The author and one undergraduate student coded all data. Both individuals initially read through the interviews for all athletes and generated a list of topics that were then organized into codes. Each person independently coded all notes and the pair met to discuss all codes and come to a consensus.



Throughout the coding process, new codes were discussed and added to the original codes when appropriate. Previously coded material was recoded to reflect changes. Following the completion of all coding, the two coders read through all coded text and met to discuss categories and overall themes. The final emerging themes were used to describe and reflect upon the experience of the athletes.

RESULTS

Athlete 1 rated the emotion “frustrated” a 10 and stronger than any other emotion at the time the sports injury questionnaire was completed (five weeks after surgery for his re-tear). Furthermore, he rated both “anger” and “helplessness” very strong at nine while rating both “tense” and “relieved” at zero (see Table 1). Furthermore, Athlete 1 reported feelings of anger, frustration, and excitement as the most salient during his recovery. Therefore, anger and frustration remained strong emotions experienced throughout his recovery. When evaluating his mood over the course of recovery, Athlete 1 had considerable variability. His mood ranged from one to 10, but was also very up and down day-by-day (see Figure 1). Due to severity and re-injury, Athlete 1 had gone through physical therapy for over one year and had started to practice again during data collection. Therefore, Figure 1 charts mood changes over four different weeks throughout recovery with two weeks showing reported mood prior to returning to practice and two weeks showing reported mood as he had started practicing again. As shown in Figure 1, both before and after he began practicing his reported mood fluctuated.

Athlete 2 rated both “frustration” and “anger” as 10’s and her strongest emotions at the time she completed the sports injury questionnaire (four weeks after surgery). She also rated “in pain”,

“tense” and “discouraged” high, all at an eight. And her lowest rated emotion was “bored” at a four (see Table 1). When assessing her emotions throughout recovery Athlete 2 reported feeling helpless, weak, worthless, unmotivated, sad, tired, and dedicated as her most salient emotions. Reported mood, after completing five weeks of physical therapy, also fluctuated ranging from one to nine (see Figure 2).

Athlete 3 reported “frustration” as a 10 and her strongest emotion at the time she completed the sports injury questionnaire (44 weeks after surgery). She also rated “angry” and “depressed” very strong, each at nine. Feeling “bored” and “relieved” were her weakest emotions felt at a zero and one, respectively (see Table 1). However, when reporting emotions throughout her recovery she reported feeling happy, excited, nervous, tired, and anxious. She also had been in physical therapy for over one year and did begin practicing again during data collection. Thus, four weeks of her reported mood throughout recovery are shown in Figure 3, with two weeks prior to returning to practice and two weeks after she returned to practice. Athlete 3 reported a more stable mood across the four weeks although still reported some variability, ranging from six to nine, and she did not report any low mood days (see Figure 3).

QUALITATIVE ANALYSIS

After exploring the interview data for explicit and implicit significance, common themes emerged and were clustered together resulting in six final categories. These categories explain in detail the athletes’ retrospective recollection of what they experienced throughout their recovery from injury. The categories included: fear is a fundamental aspect of injury, psychological repercussions during recovery, coping with a new reality, life





changes outside the sport, competing again, and feelings after retirement (see Table 2). Additionally, athletes provided advice they would give to other athletes battling through injury recovery. There was considerable overlap relative to emotions, struggles, and coping resources with more differences seen in how the athletes feel currently, after retiring.

As shown in the table, all athletes reported experiencing fear either immediately after the injury occurred or during their recovery process. For example, one athlete reported, "Once it kept getting worse I became scared, anxious, angry and the feeling of thinking I wasn't 'good' enough for the running program anymore." Being injured and enduring months of physical therapy took a toll on the athletes psychologically as well. The athletes all reported experiencing a decrease in confidence as well as feelings of frustration, anxiety, stress, and depression. Although they each reported ways of coping, the injury did impact each of them outside of sport as well. Specifically, athletes reported feeling less motivated for school, feeling sad or depressed all the time, being upset and angry, having less patience, separating themselves from teammates and friends, impacting friendships and relationships, and impacting productivity outside of sport.

Fortunately, each athlete was able to compete at the college level again. Unfortunately, none of them were able to compete again at 100%. This led to various feelings such as frustration, disappointment, and emotional exhaustion during their last seasons. And after finishing their last competitive seasons, one athlete wondered how different things would be if the injury never happened, another avoided thinking about it all, and one athlete felt great after retiring (See Table 2).



DISCUSSION

Stein (1984) has noted that athletes are “blessed,” and it is easy to forget they are doing super human feats at times.

We forget that what they do is hard. We so rarely see them at their most vulnerable – in pain and out of commission. And we almost never hear, from their perspective, about those injuries that disrupt their existence and play havoc with their futures (Stein, 1984, p.64).

Valuable case studies provide a holistic look into a specific phenomenon with the purpose of gathering comprehensive and in-depth information about each specific case; therefore, the focus is very narrow (Patton, 2002). This allows case studies to investigate complexities that otherwise would not be captured. Another major benefit of a case study is its ability to capture the lived experience and reality of an individual. Hodkinson and Hodkinson (2001) describe the potential of case studies, when applied successfully, to “retain more of the ‘noise’ of real life than many other types of research” (p. 3).

A case study allows a researcher to use a range of tools on one subject, which facilitates a comprehensive understanding of the phenomenon of interest. Therefore, in this case study, self-referenced data was a crucial piece in gathering the lived experience of the athletes. Although the sport injury questionnaire used in this study was not necessarily valid, as the athletes are their own baselines, it did allow for the detection of changes over time in particular psychological attributes for each athlete.

This case study suggests that while some prominent emotions remained throughout recovery for each of these three athletes,

additional emotions also surfaced throughout the duration of recovery. Initially, anger and frustration were rated very high for these three athletes; however, over time emotions such as excitement, fatigue, nervousness, anxiousness, and frustration were reported as the most prominent. This may provide important insight for those working with athletes throughout recovery (i.e., physical therapists, athletic trainers, sport psychology professionals). Knowing what emotions appear to be stronger during each phase of rehabilitation will help sport psychology professionals choose appropriate psychological skills to help athletes mentally recover and cope with the stage of recovery they are dealing with at any given time. This information is also helpful for physical therapists and athletic trainers. The day-to-day exercises or repetitions prescribed may be tweaked knowing that in some phases of rehabilitation athletes may feel more fatigue. Likewise, in phases of high frustration perhaps choosing new or different exercises would be beneficial to the athletes. Having a new challenge may increase motivation, confidence, and ultimately mood. Knowing the most salient emotions in different phases of recovery may also increase awareness for the kind of information to communicate to the athlete and the need for various forms of support. For example, knowing athletes feel more anxiety during one phase of recovery may elicit very different communication or types of support from the physical therapist or athletic trainer than during times of frustration.

Interestingly, depression and being scared were rated in the top four for only one athlete (Athlete 2). She also reported feeling worthless, sad, and helpless during that initial time period. This athlete was experiencing a serious injury for the first time and was only about one month post-surgery when reporting her emotions. This finding suggests that maybe depression, which is so often associated with injury, is really an emotion felt at the earlier stages and, similar to previous research, anger and frustration may be more apparent in later stages of recovery in chronic injuries (Hedgpeth & Gieck, 2004). Furthermore, some studies indicate that as athletes near full recovery and return to playing, depression and frustration remain present, but fear of re-injury surfaces more

prominently (Ardern, Webster, Taylor, Feller 2011; Bianco, Malo, & Orlick, 1999; Johnston & Carroll, 1998).

In addition to emotional changes throughout recovery, the athletes in this case study showed fluctuating mood throughout their entire recovery. While similar to previous research, this case study followed athletes throughout their entire recovery period (lasting several months or even more than one year) and even as the athletes began participating in their sports again. Based on findings from previous research, athletes who reported negative mood appeared to be more susceptible to injury or sustained more severe injuries (Dvorak et al., 2000; Ekenman, Hassmen, Koivula, Roll, & Felliinder-Tsai, 2001; Lavallee & Flint, 1996). Negative mood may be crucial in the return to play of athletes previously injured especially since one of the most likely fears athletes have is re-injury (Ardern et al., 2013; Walker, 2006).

Results from this case study illustrate that while moods were rated differently for Athletes 1 and 2 at the same point in time (four and five weeks after surgery), there was still considerable fluctuation for both athletes. Athlete 1 is male, and he showed the largest mood swings initially and still showed substantial changes 16 weeks out. As shown in Figure 1, Athlete 1's mood over the four chosen weeks ranged from 1-10 with a lot more variability day-to-day than Athlete 2, who varied from one-to-nine, but with less fluctuation and fewer low days. Brewer (2007) notes that athletes have different reactions depending on whether they are experiencing their first or second injuries. Therefore, Athlete 1's frustrations and mood fluctuations may have been a result of this being his third knee injury (second identical injury), his inability to play at his highest potential, playing with high levels of pain, and fear of re-injury (Brewer, 2007). Understanding that mood is likely more variable when an athlete experiences a repeat injury and negative emotions may be stronger, provides key information for physical therapists or athletic trainers to refer athletes to sport psychology professionals early on during recovery as well as prompting sports psychology professionals, physical therapists or athletic trainers to find strategies to help



minimize the mood swings and negative emotions. Furthermore, focusing on negative outcomes may be minimized if mood is higher and more stable, thereby, fear of re-injury may also be minimized.

Self-reported mood variations lessened considerably with Athlete 3; however, she was also furthest out from surgery yet still rehabilitating her injury. While fluctuation remained at 44 and 48 weeks, it was fluctuating between six and eight, and by 60 weeks, when she had started to run again, she was stable at seven.

Treatment setbacks, prolonged plateaus within treatment, or unsuccessful attempts to return to play can have a damaging psychological impact on the athlete, potentially increasing a sense of failure or fear of re-injury (Heil, 1993). This has important implications for any athlete trying to come back after a significant injury especially since fear of re-injury appears to be very prominent for athletes prior to return (Ardern et al., 2013). Research, however, shows it is possible to intervene with athletes through psychological strategies such as positive self-talk, mental imagery, goal setting, and social support, which help control emotions and enhance motivation (Santi & Pietrantonio, 2013). Social support has also been shown to buffer symptoms of depression and anxiety upon sport return (Yang et al., 2014).

CONCLUSIONS & IMPLICATIONS

As this case study reveals, day-to-day mood is impacted throughout the entirety of injury rehabilitation. Emotions and mood fluctuate greatly even into the very late stages of recovery, and this impacts the athletes both on and off the field. Interestingly, both frustration and anger were rated as strong emotions four to five weeks after surgery as well as 44 weeks after surgery. Psychological strategies are becoming more important in the athletic training room and

physical therapy environments as increasing evidence indicates athletes who are better at coping with injuries can be distinguished from those less able to cope based on psychological characteristics and behaviors (Brewer, 2003). Because athletic trainers and physical therapists are often the ones with the most frequent contact with athletes from injury onset to full recovery, they have a unique role and opportunity to observe the emotional states of these athletes throughout recovery. Knowing variability of mood exists throughout recovery as well as common emotions felt at the different phases can assist the athletic trainers and physical therapists in deciding which exercises to use, when to change the rehabilitation routine, and when it is especially important to have a sports psychology professional on board to help athletes build appropriate coping skills to work through the highs and lows of recovery.

Social support is an effective tool used in helping injured athletes cope with their injury and successfully get through rehabilitation. Emotional support in particular may be fundamental to recovery for collegiate athletes (Clement & Shannon, 2011). Support of coaches and teammates often dissipates as the novelty of the injury wears off. Unfortunately, this is the exact time when athletes most need social support. Physical therapists or athletic trainers provide informational support to the athlete, but they may also be their main source of emotional support (Ford & Gordon, 1993; Gordon, Potter, & Ford, 1998). As a result, athletic trainers and physical therapists should make a point to provide the needed emotional support, as well as encourage social support among athletes within their clinic or school.



Furthermore, previous research reveals that athletes do not fully understand the rehabilitation process immediately after being injured and often do not grasp how specific exercises in rehabilitation will benefit them playing again (Francis, Andersen, & Maley, 2000). This is particularly frustrating when they have setbacks or do not see big gains in rehab. This lack of understanding can create poor mood, negative emotions, and diminished motivation. Francis and colleagues (2000) suggest that having a better understanding of the rehabilitation process will help athletes see it more realistically and therefore will reduce anxiety (Francis et al., 2000). This indicates that the informational support provided by the medical team may be lacking key information or details for the athlete that could have considerable implications for reducing anxiety and other negative emotions while improving mood and motivation. Additionally, athletes often miss subtle gains that physicians or sports medicine specialists recognize easily. This may cause the athlete to think he or she has hit a plateau (Heil, 1993). Therefore, the medical team should provide an anatomical description of what happened along with an explanation of how progress is gauged and a timetable for recovery. Also, throughout recovery the medical team should continue to explain the use and importance of each new exercise so the athlete has a clear picture of the road to recovery.

LIMITATIONS AND FUTURE DIRECTIONS

This study provides longitudinal data and sheds light on the psychological impact of injury on college athletes suffering from a substantial injury requiring a long recovery. However, there are some limitations of this case study. Data is all self-report and not from a standardized inventory. Future studies should not only investigate more athletes suffering from prolonged injury rehabilitation to strengthen the results found in this case study, but also use standardized mood scales as well as standardized return-to-sport inventories. Another future direction for research is to examine the communication between healthcare providers and athletes. This information, relative to the kinds of communication athletes feel are most helpful throughout recovery, and may be a crucial piece in lowering some of the typical negative emotions often experienced throughout recovery (i.e., frustration and depression).



REFERENCES

- Ardern, C.L., Webster, K.E., Taylor, N.F., & Feller, J.A.** (2011). Return to sport following anterior cruciate reconstruction surgery: A systematic review and meta-analysis of the state of play. *British Journal of Sports Medicine*, 45, 596-606.
- Ardern, C.L., Taylor, N.F., Feller, J.A., & Webster, K.E.** (2013). A systematic review of the psychological factors associated with returning to sport following injury. *British Journal of Sport Medicine*, 47, 1120-1126.
- Bianco, T., Malo, S., & Orlick, T.** (1999). Sport injury and illness: Elite skiers describe their experiences. *Research Quarterly for Exercise and Sport*, 70, 157-169.
- Brewer, B. W.** (2003). Developmental differences in psychological aspects of sport injury rehabilitation. *Journal of Athletic Training*, 38, 152-153.
- Brewer, B. W.** (2007). Psychology of sport injury rehabilitation. In G. Tenenbaum, & R. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp. 404-424). Hoboken, NJ: Wiley & Sons.
- Brewer, B. W., & Cornelius, A. E.** (2010). Self-protective changes in athletic identity following anterior cruciate ligament reconstruction. *Psychology of Sport and Exercise*, 11(1), 15.
- Christino, M. A., Fantry, A. J., & Vopat, B. G.** (2015). Psychological aspects of recovery following anterior cruciate ligament reconstruction. *Journal of the American Academy of Orthopaedic Surgeons*, 23(8), 501-509.
- Christino, M. A., Flemming, B. C., Machan, J. T., & Shalvoy, R. M.** (2016). Psychological factors associated with anterior cruciate ligament reconstruction recovery. *The Orthopaedic Journal of Sports Medicine*, 4(3), 1-9.
- Clement, D., & Shannon, V. R.** (2011). Injured athletes' perceptions about social support. *Journal of Sport Rehabilitation*, 20(4), 457-470.
- De Heredia, R. A., Munoz, A. R., & Artaza, J. L.** (2004). The effect of psychological response on recovery of sport injury. *Research in Sports Medicine*, 12(1), 15-31.
- Dvorak, J., Junge, A., Chomiak, J., Graf-Baumann, T., Peterson, L., Rosche, D., & Hodgson, R.** (2000). Risk factor analysis for injuries in football players: Possibilities for a prevention program. *American Journal of Sports Medicine*, 28(5 Suppl), S69-74.
- Ekenman, I., Hassmen, P., Koivula, N., Roll, C., & Felliinder-Tsai, L.** (2001). Stress fractures of the tibia: Can personality traits help us detect the injury-prone athletes? *Scandinavian Journal Medicine and Science in Sport*, 11(2), 87-95.
- Ford, I., & Gordon, S.** (1993). Social support and athletic injury: The perspective of sport physiotherapists. *Australian Journal of Science and Medicine in Sport*, 25(1), 17-25.
- Francis, S. R., Andersen, M. B., & Maley, P.** (2000). Physiotherapists' and male professional athletes' views on psychological skills for rehabilitation. *Journal of Science and Medicine in Sports*, 3(1), 17-29.
- Gall, M. D., Borg, W. R., & Gall, J. P.** (1996). Educational research: An introduction. White Plains, NY: Longman.
- Gordon, S., Potter, M., & Ford, I. W.** (1998). Toward a psychoeducational curriculum for training sport-injury rehabilitation personnel. *Journal of Applied Sport Psychology*, 10(1), 140-156.
- Granito, V. J., Jr.** (2001). Athletic injury experience: A qualitative focus group approach. *Journal of Sport Behavior*, 24, 63-82.
- Grindstaff, J. S., Wrisberg, C. A., & Ross, J. R.** (2010). Collegiate athletes' experience of the meaning of sport injury: A phenomenological investigation. *Perspectives in Public Health*, 130(3), 127-135.
- Hedgpeth, E. G., & Gieck, J.** (2004). Psychological considerations for rehabilitation of the injured athlete. In W. E. Prentice (Ed.), *Rehabilitation techniques for sports medicine and athletic training* (4th ed.,). New York: McGraw Hill.
- Heil, J.** (1993). Specialized treatment approaches: Problems in rehabilitation. In J. Heil (Ed.), *Psychology of sport injury* (pp. 195-218). Champaign, IL: Human Kinetics.
- Hodkinson, P. & Hodkinson, H.** (2001). The strengths and limitations of case study research. Retrieved from http://education.exeter.ac.uk/tlc/docs/publications/LE_PH_PUB_05.12.01.rtf
- Jackson, N.** (2013). The first seven years. *Slow getting up: A story of NFL survival from the bottom of the pile* (pp. 9-26). New York: HarperCollins.
- Johnston, L. H., & Carroll, D.** (1998). The context of emotional responses to athletic injury: A qualitative analysis. *Journal of Sport Rehabilitation*, 7, 206-220.
- Lavallee, L., & Flint, F.** (1996). The relationship of stress, competitive anxiety, mood state, and social support to athletic injury. *Journal of Athletic Training*, 31(4), 296-299.

Leddy, M. H., Lambert, M. J., & Ogles, B. M. (1994). Psychological consequences of athletic injury among high-level competitors. *Research Quarterly for Exercise and Sport*, 65, 347-354.

Leedy, P. D. (1997). *Practical research: Planning and design* (6th ed.). Upper Saddle River, NJ: Prentice-Hall, Inc.

McCullough, K.A., Phelps, K.D., Spindler, K.P., et al. (2012). Return to high school-and college-level football after anterior cruciate ligament reconstruction: A multicenter orthopaedic outcomes network (MOON) cohort study. *American Journal of Sports Medicine*, 40, 2523-2529.

Morrey, M. A., Stuart, M. J., Smith, A. M., & Weise-Bjornstal, D. (1999). A longitudinal examination of athletes' emotional and cognitive responses to anterior cruciate ligament injury. *Clinical Journal of Sport Medicine*, 9(2), 63-69.

Naoi, A., & Ostrow, A. (2008). The effects of cognitive and relaxations interventions on injured athletes' mood and pain during rehabilitation. *The Online Journal of Sport Psychology*, 10(1)

O'Connor, E., Heil, J., Harmer, P., & Zimmerman, I. (2005). Injury. In J. Taylor, & G. Wilson (Eds.), *Applying sport psychology* (pp. 187-206). Champaign, IL.: Human Kinetics.

Patton, M. Q. (2002). Variety in qualitative inquiry: Theoretical orientations. *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Petrie, G. (1993). Injury from an athlete's point of view. In J. Heil (Ed.), *Psychology of sport injury* (pp. 17-24). Champaign: Human Kinetics.

Podlog, L., Dimmock, J., & Miller, J. (2011). A review of return to sport concerns following injury rehabilitation: Practitioner strategies for enhancing recovery outcomes. *Physical Therapy in Sport*, 12, 36-42.

Santi, G., & Pietrantonio, L. (2013). Psychology of sport injury rehabilitation: A review of models and interventions. *Journal of Human Sport & Exercise*, 8(4), 1029-1044.

Stein, H. (1984). Brought to his knees. *Sport*, 63-66.

Strauss, A. & Corbin, J. (1998). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory*. 2nd ed. Thousand Oaks, CA: Sage.

Tracey, J. (2003). The emotional response to the injury and rehabilitation process. *Journal of Applied Sport Psychology*, 15(4), 279-293.

Udry, E., Gould, D., Bridges, D., & Beck, L. (1997). Down but not out: Athletes' responses to season-ending injuries. *Journal of Sport & Exercise Psychology*, 19(3), 229-248.

Walker, N. (2006). *The meaning of sports injury and re-injury anxiety assessment and intervention*. (Unpublished University of Wales, Aberystwyth.

Williams, J. M., Rotella, R. J., & Heyman, S. R. (1998). Stress, injury, and the psychological rehabilitation of athletes. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (Third ed., pp. 409-428). Mountain View, CA: Mayfield Publishing Company.

Yang, J., Schaefer, J. T., Zhang, N., Covassin, T., Ding, K., & Heiden, E. (2014). Social support from athletic trainer and symptoms of depression and anxiety at return to play. *Journal of Athletic Training*, 49(6), 773-779.

Table 1: Emotions post-injury

EMOTION	ATHLETE 1	ATHLETE 2	ATHLETE 3
HELPLESSNESS	*9	7	8
BORED	3	4	0
ANGRY	*9	*10	*9
SHOCKED	3	5	3
IN PAIN	5	*8	3
SCARED	6	7	*9
TENSE	0	*8	7
DEPRESSED	6	5	*9
FRUSTRATED	*10	*10	*10
DISCOURAGED	*8	*8	8
OPTIMISTIC	3	6.5	3
RELIEVED	0	7	1

TABLE 2: Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
<p>FEAR IS A FUNDAMENTAL ASPECT OF INJURY</p>	<p>3</p>	<p>“At first I was just extremely disappointed and very nervous. This was the first time I was ever seriously injured.”</p> <p>“At first I was very optimistic and was just prepared to work hard and get back to 100%. But months after surgery the optimism had completely worn off and I felt like I was fighting a battle that was never ending. And that I really feared never getting back to 100%.”</p>	<p>“Throughout this process I always felt ‘behind’ my teammates because I wasn’t able to do the same workouts as them. I was in a constant state of not knowing what my actual fitness level on the field (and playing soccer) would be and that was very scary.”</p>	<p>“I was very nervous and scared about getting actual surgery. Also, I was just disappointed how long it would take and the insecurity of not knowing if I was going to be the same runner again horrified me.”</p> <p>“Once it kept getting worse I became scared, anxious, angry and the feeling of thinking I wasn’t ‘good’ enough for the running program anymore.</p> <p>“My main fears were the thoughts of my future in running. Was I going to be the same runner, if I stayed running in a collegiate level would I actually recover properly, will I always be in pain. . . I also had the biggest fear of actually gaining my confidence back as an athlete.”</p>

TABLE 2 (continued): Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
<p>PSYCHOLOGICAL REPERCUSSIONS DURING RECOVERY</p>	<p>3</p>	<p>“Psychologically I was almost defeated. I did everything I was asked to do and then some and I had still not made it back to playing. This had a great effect on me, not only on the field, but off. It was a very depressing period.”</p>	<p>“Psychologically, it was hard to not be able to train like the rest of my team.”</p>	<p>“It caused a lot of stress and anxiety. I couldn’t figure out if I was ever making the right decision and who I could actually trust out of the supporters I was around (coaches, teammates, doctors, physical trainers, etc.). I felt the most insecure I have ever felt. My confidence went down extremely and even when things would start going well I always felt like it’s going to go bad again soon.”</p> <p>“...going through so many ups and downs during the recovery time was VERY difficult for me.”</p>

TABLE 2 (continued): Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
<p>COPING WITH A NEW REALITY</p>	<p>3</p>	<p>“I had a few great teammates I could lean on. Also, I saw a sports psychologist to help me deal with issues and to try and come up with ideas on how I could get back to playing the highest level.”</p>	<p>“I saw a sports psychologist to cope with the emotional stress from not being able to play or get the same exercise I had been getting...other than that, I tried to not think about what I was going through and did my best to not let it affect other aspects of my life.”</p>	<p>“After a while of so many ups and downs that was very difficult for me to keep doing it by myself. So I saw a sports psychologist and tried to go day by day. I also tried to surround myself with a positive environment for me and usually that was around people who weren’t competing. I tried to enjoy the city I lived in more and not focus so much on my injury and running...basically distracting myself from my injury.”</p>

TABLE 2 (continued): Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
<p>LIFE CHANGES OUTSIDE OF SPORT</p>	<p>3</p>	<p>“I was very depressed for a long period of time following all of my serious injuries.”</p>	<p>“It definitely made me feel less motivated for school. I just felt sad all the time thinking about what my teammates were doing without me, how much effort it was going to be to crutch to class, how I had to alter my diet because I wasn’t working out as much (I love food and was also always worried about gaining weight). For me, being in a bad mood definitely affects how productive I am in every aspect of my life. I didn’t want to do homework, I just wanted to lay in bed and feel sorry for myself. I ended up dropping a class that involved a lot of lab work because I didn’t want to take the time to crutch up to the lab every day. It also affected my relationship a little bit because I was dating another athlete at the time and he NEVER got injured so I felt like there was a huge part of my life I couldn’t share with him. I also just felt really weak in general knowing that I didn’t embody what an athlete should be. All these negative emotions together made me not enjoy activities that used to make me happy.”</p>	<p>“I know my mood was definitely affected. If I had a bad day with my injury and was in pain my mood was definitely a lot worse. I would be upset, disappointed, and sometimes angry. I felt like I got more anxiety attacks that year, which I never used to get. I wouldn’t have as much patience and was easily irritated. I tried really hard not to let it affect my relationships with people but it really made me feel like an outsider with the team. I stayed close with the old team, but once everyone started graduating it was very difficult to connect with the new and upcoming team because I was the injured one. So I was pretty separate, which was my decision. Being around everyone just made me more upset mainly because of annoyance and jealousy.”</p>

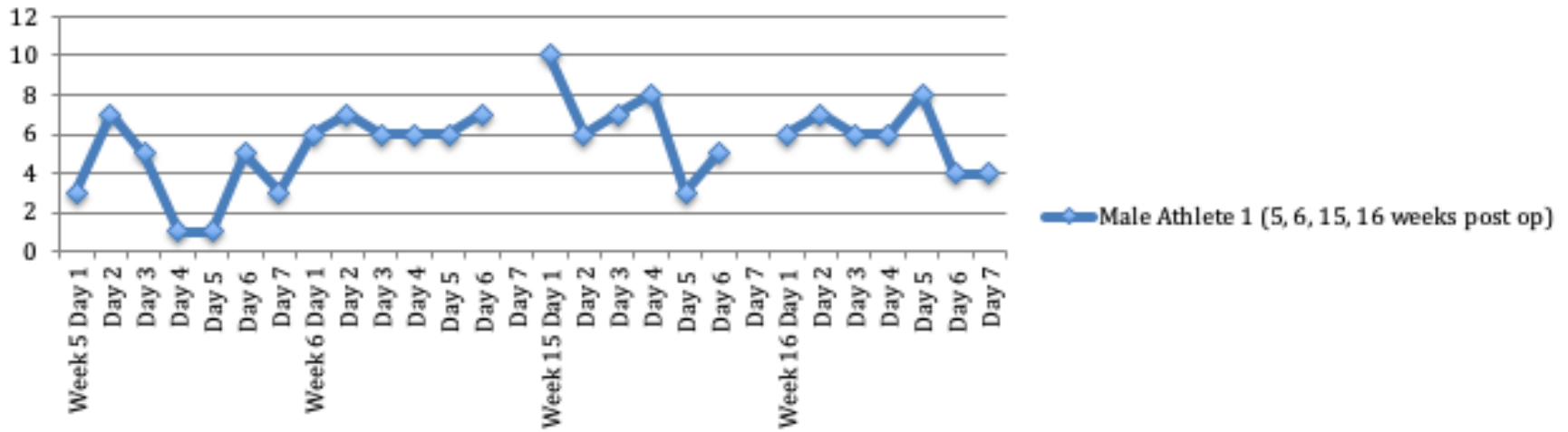
TABLE 2 (continued): Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
<p align="center">COMPETING AGAIN</p>	<p align="center">3</p>	<p>“When I returned I just learned to appreciate the game. It was extremely frustrating though. Just the fact that I could never get back to playing 100% and also playing with pain...I was confident just frustrated.”</p> <p>“At first I was so excited to be playing again that I was always happy. Then some symptoms started coming back, which I was told might be a possibility, and I got frustrated a lot. I also experienced some frustration when I would not perform as well in certain things as my teammates.”</p>	<p>“I was very confident in most aspects of my game when I started playing again.”</p> <p>“It felt great to be running again and when I had a good workout, pain free or a little pain I was so happy. Unfortunately, days like that came not as often so there were many days I was emotionally exhausted usually with disappointment. I am a very positive person but after so many rollercoasters with my injury when I had a bad day I usually became very sad and frustrated. I always had in the back of my mind things could be worse and to always take it day by day, but the feelings of anxiety and disappointment always seemed to follow me. I was confident when I would have a good workout, especially with the team or when I would finish a long run without stopping because of pain.”</p>	<p>“The only difficult part was my Achilles was never completely pain free. Also, even though I was in shape again I didn’t get to really show it how I would have liked my senior year, at my last race for college. My coaches really got in my head through the years, which was very frustrating.”</p>

TABLE 2 (continued): Athlete experience throughout injury recovery

CATEGORY	N (PARTICIPANTS) (N=3)	ATHLETE 1	ATHLETE 2	ATHLETE 3
FEELINGS AFTER RETIREMENT	3	"I sit here and just wonder what could have happened if I never got injured. How much different my career would have been."	"I still try not to think about it too much in depth...it makes me pretty emotional because it always makes me think about what kind of player I could have been if there was nothing wrong with me."	"Today I am feeling great about my sport because I am coaching in an underdeveloped country and teaching kids and adults how to run. They knew nothing about running and now can actually run more than a mile and are running fast times. My team has grown over the past year and it makes me very happy. It also makes me appreciate running again."
ADVICE FOR OTHERS	3	"The best advice I could give someone is just trust the process. Just continue to battle everyday. It may not always be easy and there will be a lot of frustrating days, but in the end everything will work itself out."	"I would tell them to start talking to a sports psychologist as soon as possible. I would also advise them to keep a diary, and let people know how much you want to be back."	"Try not to let your injury take over your world. Also, find someone you absolutely trust in your recovery process and let them guide you. Try to focus on the positives and stick up for yourself. In the end it's your body, mind, emotions, so don't let anyone else take that away from you. And if you can't stick up for yourself find someone around you that will! Recovering from a severe injury is a lot to go through and you do need help. So find that person or people that will make it the easiest way possible for you to accomplish a successful recovery."

Figure 1: Reported mood across time: Male athlete 1



*Note: Week 5 & 6 are prior to returning to practice and weeks 15 & 16 are during initial return. The week numbers correspond with his re-injury or second surgery.

Figure 2: Reported mood across time: Female athlete 2

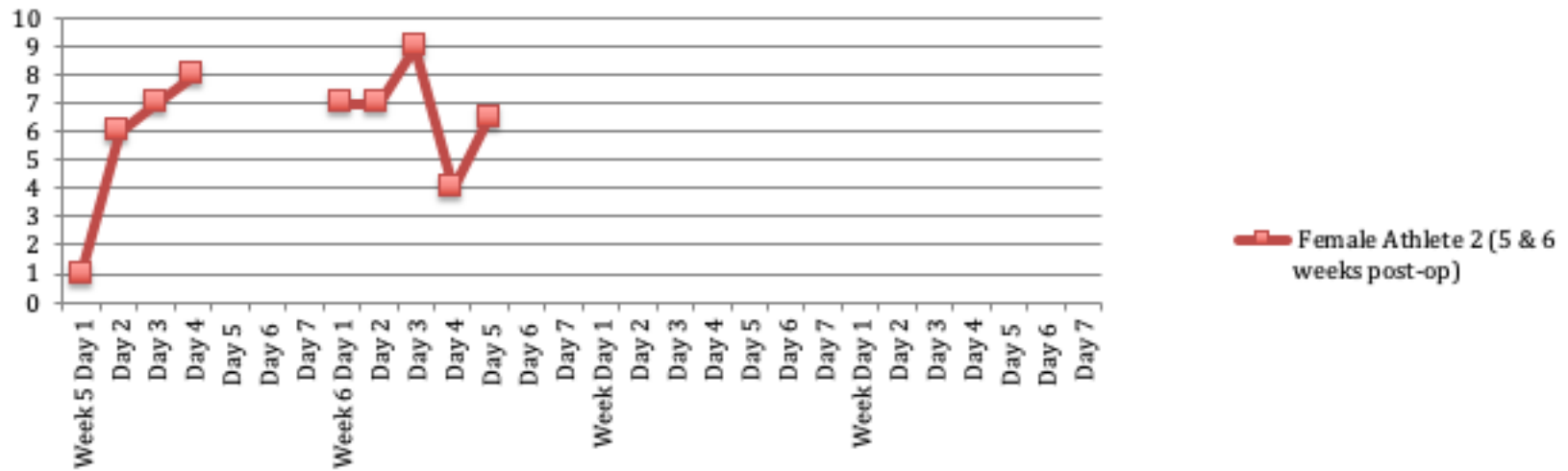
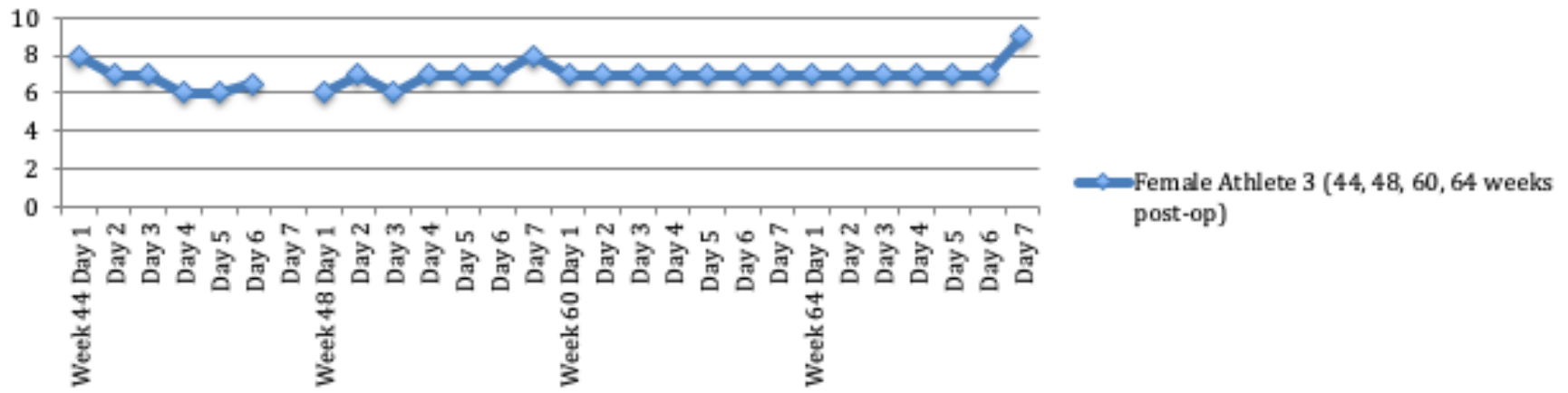


Figure 3: Reported mood across time: Female athlete 3



*Note: Week 44 & 48 are prior to returning to practice and weeks 60 & 64 are during initial return.