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College Athletes' Experiences with a Lower Body Re-Injury: A Phenomenological Investigation

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Lower extremity injuries are the most common musculoskeletal sport injuries and are an inevitable risk to sport participation (Chalmers, 2002; Dane et al., 2004; Kay et al., 2017). When an athlete sustains an injury, fear of re-injury is a salient emotion many athletes experience (e.g., Disanti et al., 2018; Kvist et al., 2005; Lentz et al., 2015). Previous research has identified fear of re-injury as a risk factor to suffering a subsequent injury (e.g., An et al., 2019; Andersen & Williams, 1988; Paterno et al., 2018; Podlog et al., 2011; Tagesson & Kvist, 2016).

Epidemiology studies have highlighted that re-injuries are of high prevalence (e.g., Gans et al., 2018; Paterno et al., 2012), and are associated with lower return-to-play rates compared to the first injury occurrence (e.g., Gans et al., 2018; Webster et al., 2019). However, there is a lack of research that has explored the psychological and emotional response to a re-injury. Therefore, this study used a phenomenological qualitative approach to understand eight college athletes’ perceptions and lived experiences in regard to the psychological response to a lower-body re-injury. Five major themes were identified: (a) prior experience and knowledge, (b) concerns, (c) motivation, (d) social support, and (e) coping strategies. It appears that the re-injury experience, while a difficult experience, has some advantages. The athlete is already familiar with the physical and mental hardships of the injury, allowing them to better cope and progress through the rehabilitation. However, the repetitiveness of repeating the same injury process and not being able to participate in their sport for an even longer time was difficult and frustrating. Despite these hardships, the athletes’ appeared to have a renewed motivation as they gained a new
perspective of cherishing their sport more and were proud of themselves of overcoming the adversity of re-injury. The findings from this study can be applied by sport personnel (e.g., coaches, athletic trainers, sport psychology professionals) to improve the re-injury experience by providing quality social support. Practical implications and future research direction will also be discussed.

INDEX WORDS: Injury, Re-injury, Fear of re-injury, Psychological and emotional response to sport injury
COLLEGE ATHLETES’ EXPERIENCES WITH A LOWER BODY RE-INJURY: A PHENOMENOLOGICAL INVESTIGATION

by

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B.S., California Polytechnic State University (Cal Poly), 2014

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MASTER OF SCIENCE

WATERS COLLEGE OF HEALTH PROFESSIONS
COLLEGE ATHLETES’ EXPERIENCES WITH A LOWER BODY RE-INJURY: A PHENOMENOLOGICAL INVESTIGATION

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DEDICATION

This thesis is dedicated to my family. This project would not have been possible without your unconditional love and support. Thank you for always believing in me and my dreams, even when I have doubted myself. I love you all so much!
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# TABLE OF CONTENTS

ACKNOWLEDGMENTS........................................................................................................... 3
LIST OF TABLES....................................................................................................................5
CHAPTER

1 INTRODUCTION..................................................................................................................6
   Study Purpose ...................................................................................................................16
2 METHODS ........................................................................................................................18
   Study Design and Rationale............................................................................................18
   Participants .....................................................................................................................18
   Procedure .......................................................................................................................21
   Data Analysis ................................................................................................................24
   Trustworthiness .............................................................................................................25
3 RESULTS ..........................................................................................................................33
   Prior Experience and Knowledge ................................................................................33
   Concerns .........................................................................................................................45
   Motivation .......................................................................................................................53
   Social Support ...............................................................................................................55
   Coping Strategies .........................................................................................................60
4 DISCUSSION ......................................................................................................................64
   Key Findings ..................................................................................................................64
   Practical Implications ..................................................................................................73
   Limitations .....................................................................................................................76
   Future Research............................................................................................................76
   Conclusion .....................................................................................................................78
REFERENCES .........................................................................................................................79

APPENDICES

A INTEGRATED MODEL OF SPORT INJURY (Wiese-Bjornstal et al., 1998).......100
B FEAR-AVOIDANCE MODEL (Lethem et al., 1983)....................................................101
C COGNITIVE-BEHAVIORAL MODEL OF FEAR OF RE-INJURY (Vlaeyen et al.,
   1995a) .........................................................................................................................102
D REVIEW OF LITERATURE .........................................................................................103
E RECRUITMENT SCRIPT ...............................................................................................154
F INFORMED CONSENT FORM .....................................................................................155
G INTERVIEW GUIDE .....................................................................................................158
H DEFINITION OF TERMS ..............................................................................................161
I GUIDED NARRATIVES ...................................................................................................162
LIST OF TABLES

Table 1: Participant Demographic Information........................................................................32
CHAPTER 1
INTRODUCTION

Injury is a common, yet potentially devastating occurrence in sport. Previous epidemiological studies have identified the knee, lower leg, ankle, and foot as the most common injured body parts in sport (Dane et al., 2004; Kay et al., 2017). Not only do athletes have to undergo physical rehabilitation for their injury, but there is also an emotional and psychological aspect to injury. One common emotional response to injury is the fear of re-injury (e.g., Disanti et al., 2018; Kvist et al., 2005; Lentz et al., 2015). A re-injury is defined as “an injury of the same type and at the same site as an index injury and which occurs after a player’s return to full participation from the index injury” (Fuller et al., 2006, p. 194). When one’s fear of re-injury becomes a reality and they suffer the same injury again, the athlete is forced to undergo the same, oftentimes painful, rehabilitation and miss time away from their sport for a second time. In the field of sport, exercise, and performance psychology, there is insufficient research on the psychological and emotional responses associated with re-injury.

Epidemiology of Sport Injury

During the 2018-2019 academic year, more than 480,000 students competed in National Collegiate Athletic Association (NCAA) sports in the United States (NCAA, 2020). While sport participation continues to rise, so does the number of sport-related injuries. It has been argued that injury is an inevitable risk to sport participation and that “injury is just part of the game” (Chalmers, 2002, p. iv22). The NCAA Injury Surveillance Program (ISP) defines an injury using the following criteria: (1) occurred as a result of participation in organized intercollegiate practice or contest, (2) required medical attention by a team certified athletic trainer (AT) or physician, and (3) resulted in restriction of participation or performance for one or more days.
beyond the day of the injury (NCAA, 2019). By this definition, there were more than one million injuries between 2009 and 2014 in college athletics (NCAA, 2019).

Dane et al. (2004) investigated the relationship between sex, sport, and injured body region in sport injuries at a university located in Turkey. They identified the lower extremities as the most frequently injured body region, specifically the foot, ankle, and knee. This was further supported by Kay et al. (2017) who found the most common body parts injured in NCAA athletics to include the knee, lower leg, ankle, and foot. Ultimately, these statistics support a substantial number of athletes will experience at least one lower body injury sometime during their athletic career.

**Psychological and Emotional Response to Injury**

When an athlete suffers an injury, the focus is often on the physical aspects of the rehabilitation (e.g., managing pain and swelling, regaining mobility, increasing strength). However, this may lead to sports medicine personnel not emphasizing or prioritizing the psychological and emotional responses to an injury (Ivarsson et al., 2017) despite various theoretical models of sport injury suggesting that the psychological and emotional responses of an injury can influence the physical and psychological outcome of the injury (i.e., returning to sport at pre-injury performance level).

One example of an injury response model is the integrated model of psychological response to the sport injury and rehabilitation process (see Appendix A; Wiese-Bjornstal et al., 1998), which several researchers have argued is the most commonly accepted and utilized model in sport psychology research (Anderson et al., 2004; Kolt, 2003; Walker et al., 2007; Walker & Heaney, 2013). This model explains that situational factors (e.g., sport type, level of competition, coach influence, rehabilitation environment) and personal factors (e.g., injury type and severity,
personality, athletic identity, individual demographics, coping skills) influence the cognitive appraisals, emotional responses, and behavioral responses to injury, in turn affecting both the physical and psychological recovery outcome of the injury. Within the field of sport and exercise psychology, researchers have applied the integrated model and other models (e.g., grief-response model, cognitive appraisal model of psychological adjustment to athletic injury) to identify the diverse psychological and emotional responses athletes may experience throughout the entire injury process, which is often segmented into the following phases: reaction to injury, reaction to rehabilitation, and reaction to return-to-play (Kamphoff et al., 2013).

Examples of common emotions experienced throughout the injury process include shock, anxiety, anger, frustration, depression, relief, jealousy, optimism, and fear (e.g., Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Johnston & Carroll, 1998; Tracey, 2003). In a qualitative study that investigated the psychosocial challenges associated with injury and illness in elite skiers, one participant reported “I trained very hard for three years and the year I could qualify for the Olympics, I fell ill. It was a huge shock. I wanted to quit. It was morally and psychologically very difficult” (Bianco et al., 1999, p. 162). Similarly, in a qualitative study involving NCAA Division II athletes, an athlete stated, “I was just a little bit hysterical because I knew I was done for the year” and “afterwards I was angry” (Clement et al., 2015, p. 98). These emotional responses fluctuate throughout the rehabilitation process and if left unaddressed, can adversely influence the rehabilitation experience and outcome.

Emotional responses to injury are oftentimes associated with psychological concerns. Examples of common psychological concerns an athlete may have during an injury recovery are lack of mobility and strength, loss of independence, loss of sport involvement, consequences of the loss of training and having a prolonged absence from their sport, concerns about their sport
career, and concerns about long-term health of their injured body part (e.g., Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Johnston & Carroll, 1998; Tracey, 2003). For example, in a mixed-method case study, an injured rugby athlete was concerned about not being able to participate in their sport for an extended period “I initially thought about my career and worried it was over. Then I was gutted at missing playing time and knowing how much time I’d miss” (Carson & Polman, 2008, p. 76). Similar to the emotional responses of athletes, if these psychological concerns are not attended to, they can negatively impact the injury experience and outcome.

**Fear of Re-Injury**

One of the most salient emotions and concerns when dealing with an injury is fear associated with suffering another injury, especially during the return-to-play phase of injury rehabilitation. A re-injury is defined as “an injury of the same type and at the same site as an index injury and which occurs after a player’s return to full participation from the index injury” (Fuller, et al., 2006, p. 194). Thus, fear of re-injury, also sometimes referred to as re-injury anxiety, is defined as “worries over the possibility of an injury recurring after an initial injury of the same type and location” (Walker & Thatcher, 2012, p. 239). Fear of re-injury is one of the most cited reasons athletes do not return to their sport following an injury (Baez et al., 2019; Lentz et al., 2015).

The concept of fear of re-injury originated from the fear-avoidance model (FAM) which describes an exaggerated pain perception exhibited by individuals with chronic low back pain (see Appendix B; Lethem et al., 1983). According to this model, there are two types of coping responses to pain, confrontation, and avoidance. When an individual engages in a maladaptive avoidance response, the individual refrains from physical or social activities that may result in
pain. This model was revised by Vlaeyen et al. (1995a) to create a cognitive-behavioral model of fear of movement/(re)-injury. This revision adds that if individuals encounter a high fear of re-injury, this can lead to a cycle of avoidance behaviors, disability, disuse, and depression (see Appendix C; Vlaeyen et al., 1995a).

While both models were not validated with an athletic population, (i.e., validated with adult patients undergoing rehabilitation for chronic low back pain) researchers in sport psychology have made parallels between the pain associated with sport injury and chronic low back pain, suggesting injured athletes with a high fear of re-injury may discontinue their sport participation as a result of that fear. For example, Baez et al. (2019) tested the application of the FAM model in athletes who had anterior cruciate ligament (ACL) reconstruction (ACLR) and concluded that the fear of pain or re-injury that the athletes experienced led to greater avoidance behaviors, disuse, disability, and depression, similar to individuals with chronic low back pain. In other words, athletes who had high levels of fear of re-injury following ACLR, had greater avoidance behaviors, like not engaging in movements like those involved in their initial injury. Since the return-to-sport phase is accompanied by frequent exposure to similar situations that may have resulted in the initial injury, this can lead to avoidance behaviors such as discontinuing sport participation because of the fear or anxiety of being injured again. If an athlete's fear of re-injury is not addressed, it can become problematic and lead to athletes prematurely dropping out of sport.

Research has suggested that fear of re-injury is more prevalent in athletes who sustained a severe injury (Cassidy, 2006; Covassin et al., 2015), engaged in high-risk sport activities (Gignac et al., 2015; Grindem et al., 2016), had unusual and frequent setbacks in rehabilitation (Podlog & Eklund, 2006), and who have a higher perceived value associated with their sport participation
(Gignac et al., 2015). Common indicators of an athlete with a high fear of re-injury include being more cautious, hesitating during certain movements, having a lack of confidence in the injured body part, holding back, giving less than maximal effort, and having a greater mood disturbance regarding the rehabilitation process (Podlog et al., 2011). This fear is related to the mechanism in which the first injury occurred, such as going through the same movement patterns that caused the original injury (Carson & Polman, 2012; McVeigh & Pack, 2015). In addition, fear of re-injury is related to the fear of suffering the consequences of an injury, such as having to face the lengthy rehabilitation period again, enduring the pain again, and having a weaker body site making them more vulnerable and susceptible to sustaining a re-injury (Taylor & Taylor, 1997).

Having a history of injury and fear of re-injury are both considered risk factors for suffering a re-injury. The stress and injury model (Andersen & Williams 1988; Williams & Andersen, 1998) suggests that when athletes who have a higher fear of re-injury are in a perceived stressful situation, like engaging in a similar movement pattern or activity that resulted in a previous injury, it can provoke a stress response which can then cause both physiological and attentional changes, leading to a re-injury. When athletes resume sport participation, athletes may be preoccupied with their thoughts about the consequences of suffering a re-injury, decreasing their attentional capacity to sport related demands. This distraction may deter from the cognitive processing related to muscle coordination, altering the mechanics of body movement which can lead to re-injury (Campbell & Ehlert, 2012). For physical impairments, fear of re-injury has been found to have a relationship with an increase in the likelihood of re-injury by altering muscle recruitment (Murphy et al, 2003; Tagesson & Kvist, 2016; Williams & Andersen, 1998), decreasing dynamic knee stability (Hartigan et al., 2013), and limiting range of motion (Brown et al., 2016).
Furthermore, research has established that certain injuries, such as ACL injuries or Achilles tendon ruptures, can predispose individuals to subsequent contralateral (i.e., opposite limb) of the same diagnosis (Arøen et al., 2014; Grindem et al., 2016; Jandacka et al., 2017; McPherson et al., 2019; Park et al., 2019; Paterno et al., 2012; Paterno et al., 2017; Paterno et al., 2018; Tagesson & Kvist 2016; Webster & Feller, 2016; Webster et al., 2019). The documented explanations for this are altered biomechanics and altered neuromuscular function that predispose both limbs to subsequent injury (Swärd et al., 2010). Therefore, the researcher is interested in re-injury of both the ipsilateral (i.e., same limb) and contralateral as research has supported there is a high prevalence of contralateral injuries.

**Re-Injury Research**

While the above studies discussed the fear of sustaining a re-injury, the following section outlines the limited research pertaining to the experiences and effects of when an athlete sustains a re-injury, and that fear becomes a reality as they must undergo the same injury and rehabilitation process for a second time. Recent epidemiological studies have demonstrated that re-injuries are prevalent and of great concern to both athletes and sport medicine personnel. Gans et al. (2018) identified that 11% of ACL injuries reported to the NCAA ISP are re-injuries. Paterno et al. (2012) employed a prospective case-control study design to compare ACL incidence rates between those who have previously undergone a primary ACLR (n = 63, 42 females and 21 males) and those with no prior knee injury (n = 39, 30 females, nine males). 25.4% of the ACLR group sustained a re-injury (either ipsilateral or contralateral) as compared to 2.6% in the control group. This demonstrates that athletes who have a history of ACLR have a nine times greater risk of having a re-injury as compared to those who have never experienced a
knee injury. These statistics suggest that re-injury is a reasonable concern for athletes due to the high prevalence rates.

As mentioned previously, fear of re-injury is associated with lower return-to-play outcomes following an index injury (i.e., the first injury); therefore, research has analyzed the return-to-play statistics for individuals who have suffered a re-injury in comparison to an index injury. For example, Webster et al. (2019) used a case series design to compare the rates of return after a contralateral ACL injury compared to a primary ACL injury. Out of the 107 participants (62 male, 45 female, $M = 23$ years, $SD = 7$), 83% returned to sport after the first ACL injury, and of those only 40% returned to sport following a subsequent contralateral surgery. Thus, there was a 43% difference in return-to-play rates, suggesting athletes who suffer a re-injury are more likely to voluntarily or involuntarily retire from their sport due to injury-related reasons. Fear of re-injury was the most cited reason for not returning to sport after both the first and second injury. In a similar study with NCAA athletes who had an ACL injury, only 50% of the athletes returned to sport following a re-injury, as compared to 87% following a first ACL surgery (Gans et al., 2018). Liu et al. (2016) compared the return-to-play rates for recurrent ulnar collateral ligament reconstruction in Major League Baseball pitchers. Results indicated less than half (42.3%) of those who underwent revision Tommy John surgery, returned to established play which the researchers defined as pitching in more than 10 games in a single season. In summary, findings support that the return-to-play rates are substantially lower following a re-injury than compared to an index injury.

**Psychological and Emotional Response to a Re-Injury**

While there is an abundance of prior research that has analyzed the psychological and emotional responses to sport injury in general, there is a lack of research that has directly
investigated the psychological and emotional responses to re-injury specifically. Suffering any injury in general can be devastating for an athlete, and there are reasons to suggest that having to go through a second rehabilitation for the same injury for a second time can be a disheartening experience and have negative consequences on the physical and psychological outcome of a sport injury. This is important to consider as it may provide insight as to why the return-to-play rates are significantly lower following a re-injury as compared to an index injury.

Few studies have described the psychological response to a re-injury. One example was conducted by Bianco et al. (1999) in which an interesting paradox was presented regarding skiers who had sustained a re-injury. With a re-injury, athletes have been through the same injury and rehabilitation before, so they are better equipped with useful information from their first injury experience to self-diagnose their injury, cope, and mentally prepare for the rehabilitation process. The initial response to injury phase is often characterized by uncertainty, and therefore having prior injury history may be beneficial in helping athletes to develop coping resources that helps to lower the stress or anxiety experienced with an injury. For example, one participant in the study stated “I knew immediately what I had done, you just know, you feel it, the dreaded pop when you’re tearing a ligament. I knew it would be a year before I would be back at any type of competitive level” (p. 162). Comparatively, an athlete with a re-injury just spent an extensive amount of time in rehabilitation to return to their sport and now have to go through the same rehabilitation process all over again. One athlete summarized this as “I just spent 24 months recovering. One year back in the saddle and I did it [the injury] again! I didn’t know if I was prepared to go through all that work just to have it all be blown away again” (p. 162). While athletes have already gone through the injury experience beforehand and thus know what to
expect in terms of the rehabilitation process, suffering a re-injury can be an emotional time for an athlete as they must be absent from their sport for even a longer time now.

Casebolt (2018) interviewed a 20-year-old female soccer player who had three ACL surgeries on the same knee within a five-year period. The researcher was primarily interested in the athlete’s confidence and the factors that influenced her confidence upon returning to play after each surgery. Four themes were identified including motivation, support, knowledge, and appraisal. For motivation, the athlete was highly motivated to return to play after the first injury. For the second and third surgeries, the athlete’s motivation stemmed from her desire to overcome the odds since she knew the return-to-play odds were much lower after multiple severe injuries. This is portrayed in her quote discussing her second injury experience “knowing that not many people [come back from two ACL surgeries] … I also kind of tried to use that as a fuel. Not just to prove other people wrong, but to prove myself wrong (p. 26). Regarding the theme of knowledge, the athlete drew upon her education and experiences of having already gone through the surgery and rehabilitation, which is similar to the paradox identified above in Bianco et al. (1999). After the first injury, the athlete stated she was “kind of naïve” (p. 29) and “ignorance is bliss” (p. 29), so she returned to play at full force and was not concerned about the possibility of re-injury. However, when she tore her ACL again, her experiences with the first surgery influenced how she responded to her second injury, leading her to be more diligent with her rehabilitation and cautious during the return-to-play phase. She summarized this as “I think it would be impossible to not be a little more tentative going into a second one. Just because now you are like, oh this isn’t just 100% foolproof” (p.30). This supports that when the reality of suffering a re-injury becomes apparent, it can lower one’s confidence in their injured body part. With the theme of appraisals, the athlete focused on maintaining a positive outlook on her
situation by reprioritizing and reframing her challenges into focusing on the lessons to be learned and trusting that these obstacles were only going to make her a stronger athlete and person. Overall, this athlete was able to remain relatively high confidence and motivation levels after each surgery, and her positive response was influenced by social support and her previous injury experiences.

Casebolt’s work (2018) represents one of the first studies to directly examine the psychological and emotional responses to suffering multiple injuries. Similar to Bianco et al. (1999), there is an interesting paradox present in which athletes with a re-injury have already gone through the rehabilitation once, and therefore are educated and familiar with the protocol. Conversely, it may be difficult to maintain confidence and motivation with re-injuries, which may present as being more cautious and having subsequent re-injury concerns. Thus, while Casebolt (2018) narrowed his research to focus on confidence, the present study continues the investigation of the area of re-injuries by focusing on the overall experience. Furthermore, with the exception of Liu et al.’s (2016) study on Tommy John re-injuries, majority of the studies on re-injury have focused on lower body re-injuries, especially ACL re-injuries due to the higher incidence rates. Therefore, this study will focus on the psychological and emotional responses of athletes who have suffered a lower body re-injury.

**Study Purpose**

In summary, research has examined the psychological and emotional responses of sport injury in general; however, there is a lack of research that considers the psychological and emotional consequences of suffering a lower extremity re-injury. Therefore, the purpose of the current qualitative study is to understand college athletes’ perceptions and lived experiences regarding the emotional and psychological response to a lower body re-injury. The specific
research questions the researcher investigated are (a) what are the lived experiences of sustaining a lower body re-injury, and (b) what are the psychological and emotional responses to sustaining a lower body re-injury. The knowledge gained from this study can provide sport psychology professionals, athletic trainers, coaches, strength and conditioning specialists, and other professionals in sport with information that can help athletes cope with the difficult challenges of suffering a re-injury, ultimately with the intention of improving return-to-play outcomes and the overall recovery experience for athletes who have been subject to a re-injury.
CHAPTER 2

METHODS

Study Design and Rationale

This study used a phenomenological qualitative approach. Phenomenology research is defined as “studies [that] explore the meaning of several people’s lived experiences around a specific issue or phenomenon” (Hancock & Algozzine, 2017, p. 9). This approach was chosen as the purpose is to acquire a thorough understanding of the lived experiences of a particular phenomenon and the meaning people attribute to those experiences (van Manen, 1997). In relation to the purpose of the current study, the researcher aimed to gain an understanding of the lived experiences of people who have suffered a re-injury. As stated in the introduction, the psychological and emotional response of a re-injury has not been thoroughly studied within the field of sport, exercise, and performance psychology. Therefore, this study exploratory in nature to gain a better understanding of injured athletes' experiences, best fitting the use of a phenomenological qualitative study design.

Participants

The target population of this study were former and current college athletes who have sustained a lower body re-injury. A re-injury was defined as “a repeat episode of a fully recovered index injury” (Fuller et al., 2007, p. 197) in either the ipsilateral (same) or contralateral (opposite) extremity. The index injury refers to an athlete’s first injury, in terms of a specific diagnosis and body location (e.g., first fracture of the left foot, first hamstring strain). A re-injury refers to an injury of the same diagnosis as the index injury after the athlete was fully recovered from the index injury, meaning they were medically cleared to resume sport participation from their doctor or athletic trainer. Regardless of which leg, the injury had to be to
the same body site and the same diagnosis as the index injury. As mentioned in the introduction and further explained in the literature review (see Appendix D), lower body re-injuries are the focus of this study as they have been identified as more common injuries (Dane et al., 2004; Kay et al., 2017) and the current literature on re-injuries in general, has focused predominantly on lower body re-injuries (e.g., Anand et al., 2016; Gans et al., 2018; Paterno et al., 2012; Webster et al., 2019; Webster & Feller, 2016).

A total of eight participants (six females, two males) were recruited for this study. The age range for the college students was 18 to 23 years of age ($M = 20$, $SD = 1.69$). Three participants were freshman, two were sophomores, one was a junior, and two were graduate students. Majority ($n = 6$) identified as White, one identified as Hispanic, and one identified as bi-racial (Hispanic and White). The nine sports represented were soccer, track & field, volleyball, cheer, gymnastics, flag football, golf, disc golf, and cross country, with several athletes participating in multiple sports. Three athletes participated in NCAA DI sports, two participated in DII sports, two participated in club sports, and one is a competitive recreational athlete. Majority of the participants had re-injuries to their knee ($n = 5$), one hamstring re-injury, one broke the same bone in their foot twice, and one athlete had two sets of re-injuries to their hip and foot. See Table 1 for full participant demographic information.

For participants to be eligible for the study, the inclusion criteria were (a) current or former college level athlete over the age of 18, (b) sustained a lower-body musculoskeletal re-injury that kept the athlete out of their sport for at least eight consecutive days, (c) both the first and second injuries were sustained during sport participation, (d) the time between the first and second injury was less than five years, and (e) the second injury occurred within the three years. The exclusion criteria included head and upper body injuries.
The following will provide the rationale and justification for the inclusion and exclusion criteria used. The athletes had to be current or former college level athletes, which included competitive recreational athletes, club, and intercollegiate varsity athletes. McGannon et al. (2018) defined competitive recreational athletes as athletes with an elite athletic identity who train in their respective sports to compete in races and competitions. This differs from a recreational athlete in which a recreational athlete does not participate in formal competitions. Thus, competitive recreational athletes were used in this study due to shared context of training and competition demands. While research does demonstrate that subsequent concussions are common (Zuckerman et al., 2015), head injuries were excluded in this study because the physical recovery, and psychological and emotional responses to a head injury are different compared to musculoskeletal injuries (Hutchinson et al., 2009). Both legs were considered in this study because research has established that certain injuries, such as ACL injuries or Achilles tendon ruptures can predispose individuals to subsequent contralateral injuries of the same diagnosis and that there is a high prevalence of contralateral injuries as well (Arøen et al., 2014; Grindem et al., 2016; Jandacka et al., 2017; McPherson et al., 2019; Park et al., 2019; Paterno et al., 2012; Paterno et al., 2017; Paterno et al., 2018; Tagesson & Kvist 2016; Webster & Feller, 2016; Webster et al., 2019). Ultimately, I was interested in the experiences of individuals who had to undergo the same rehabilitation for a second time, and therefore both ipsilateral and contralateral re-injuries were considered in this study. In regard to injury severity, the researcher used the NAIRS classification system which classifies injuries based off severity: minor (less than eight days off from sport), moderate (eight to 21 days off from sport), and severe (more than 21 days off from sport) (Alles et al., 1979). Minor injuries that resulted in an athlete missing less than eight days from their sport were excluded from this study as the researcher was interested in the
experiences of individuals who underwent a prolonged rehabilitation for a second time. Lastly, the index injury was required to be within the previous five years to limit recall bias.

**Procedure**

Upon receiving Institutional Review Board approval, participant recruitment began. Participants were recruited using a purposeful and convenience sampling method from colleges located in the Southeastern region of the United States. For intercollegiate varsity athletes, the research recruited participants via athletic trainers, and for club athletes, the researcher recruited via club presidents. The athletic trainers’ and club presidents’ emails were accessed from school websites, and the researcher emailed them a recruitment script (see Appendix E). They were asked to forward the email to all athletes on their respective team instead of just forwarding the email to athletes that met the inclusion criteria to account for Health Insurance Portability and Accountability Act (HIPAA) restrictions and procedures. This recruitment script outlined the purpose of the study, the inclusion criteria, and how to contact the researcher if they met the inclusion criteria and were interested in participating in a 30–45-minute Zoom interview.

Those who were interested in the study and met the inclusion criteria were asked to contact the researcher and then were emailed a Qualtrics link with the informed consent form (see Appendix F) detailing the study purpose, perceived risks and benefits of the study, and what their participation would entail of. Once the consent form was received by the researcher, the researcher set up a date and time for the interview with the participant and emailed them a Zoom invite. Overall, 13 athletes expressed interest in the study and were sent the informed consent form via Qualtrics; however only eight participants completed the informed consent and participated in data collection (62% response rate).
Data collection consisted of a semi-structured interview conducted over Zoom. Peoples (2020) recommended the use of a semi-structured interview guide for a phenomenological study as it “allows researchers to choose specific questions that cover a range of topics specific to the research question(s) but limit the ability to deviate from specific content, which does not allow sufficient opportunities for the research participants to share unanticipated information that is relevant to the research topic” (p. 52). The use of a semi-structured interview guide allowed the researcher to ask follow up questions to probe the participant for greater detail in their experiences, while still maintaining consistency between the interviews with different participants. The interview guide (see Appendix G) was designed to be approximately 30 to 45 minutes in length and was piloted with three individuals which will be further explained in the trustworthiness section below. Following the pilot test, the final interview guide had nine structured questions with potential probing and follow up questions. The average interview length was 40 minutes, ranging from 29 minutes to 63 minutes. Examples of the structured questions included (a) “could you tell me about your first injury,” (b) “could you tell me about your second injury,” (c) “did you notice any differences between your first injury experience and the second injury? If so, what were they,” and (d) “what has been the most challenging part of going through the same injury and rehab for a second time.” Examples of probing questions included (a) “how did the injury happen,” (b) “what was your reaction when the injury happened,” and (c) “what emotions were you experiencing during the rehabilitation phase and the return-to-play phase”. Phenomenology influenced the development of the interview and probing questions to gain an in-depth comprehension of the lived experiences of sustaining a re-injury after returning to play from the index injury.
The interviews were conducted over Zoom, a video conferencing platform. Research has identified the use of video conferencing as beneficial in qualitative research for several reasons such as convenience, cost-effectiveness, and flexibility (Horrell et al., 2015). However, one concern with utilizing Zoom was the potential for a breach of confidentiality, which was outlined in the informed consent and discussed with the participant prior to the start of the interview. To prevent a breach of confidentiality, the researcher used the passcode and waiting room features on Zoom (Zoom Video Communication Inc., 2020). The interviewee was required to enter the passcode before joining the meeting, preventing uninvited individuals from joining the meeting. The researcher (host of the meeting) also had to admit the participant into the meeting, ensuring only the researcher and interviewer were in the meeting.

Prior to the interview beginning, the researcher reminded the participants that their participation was voluntary, meaning they could withdraw their consent at any time without penalty, and that they could choose not to answer any of the questions. The interviews were recorded using an audio tape recorder as well as the recording feature on Zoom as a backup method. The researcher informed the participants when the recording began and ended. Interviews were transcribed verbatim by the researcher and undergraduate students who were assisting the researcher on the study. Transcripts were stored and secured in a password protected folder on a locked computer.

Participant recruitment continued until data saturation was reached which was at a total of eight participants. Data saturation is “commonly considered as the ‘gold standard’ for determining sample size in qualitative research” (Saunders et al., 2018, p. 1897) and is defined as “the point in coding when you find that no new codes occur in the data. There are mounting instances of the same codes, but no new ones” (Given, 2016, p. 135). To help determine if data
saturation was reached to conclude data collection, the researcher used a critical friend. The purpose and process of using a critical friend is discussed in the trustworthiness section below.

Data Analysis

Data was analyzed using an inductive approach. Thomas (2006) defines inductive analysis as “approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher” (p. 238). Furthermore, Peoples (2020) identified the goal of analysis in phenomenology as “to illuminate the essence of a phenomenon, the entirety of it, without the corruption of personal bias” (p. 57). Therefore, inductive analysis was the most appropriate data analysis method for this phenomenological study as it allowed for the researcher to capture and describe the lived experiences of the injured athletes and to convey a coherent narrative about their perceptions and experiences with a re-injury from their own words.

Peoples (2020) outlines the steps of data analysis which the researcher and their colleague followed. First, the research team listened to the audio recordings and read the transcribed interviews several times to ensure they were familiar with the content and gained a comprehensive understanding of the participants’ stories. Second, the researchers independently created preliminary meaning units, also known as codes. A meaning unit is defined as “the allocation piece of data that reveals a feature or trait of the phenomenon being investigated” (Peoples, 2020, p. 60). The researchers then went through the data and codes together to agree on the final codes. If there was a disagreement between codes, the researchers sought out the opinion of a third researcher who is familiar with the project. The next step was to create final meanings, also known as themes, based on the initial codes of each participant. Fourth, the researchers created situated narratives in which the researcher went through the participants
responses to individual interview questions and selected direct quotes that related to the themes identified in step three. Step five consisted of combining the situated narratives of each participant into general narratives to highlight and unify the participants’ lived experiences. See Appendix I for the selected general narratives. Lastly, the final step was to create a general description of the participants' perspectives and experiences, and to discuss the themes that were prevalent in all or most of the participants' cases.

**Trustworthiness**

To establish qualitative trustworthiness the researcher implemented several strategies to optimize the trustworthiness of the study’s findings. These strategies included pilot testing, member checking, utilizing a critical friend, using rich and thick descriptions, prolonged engagement, and recognizing researcher bias.

**Pilot Testing**

The purpose of pilot testing is to determine “if there are flaws, limitations, or other weaknesses within the interview design and will allow for him or her [the researcher] to make necessary revisions prior to the implementation of the study” (Turner, 2010, p. 757). Therefore, the researcher piloted the interview guide with three individuals to ensure participants would understand the interview questions and that the ordering of questions was logical. These individuals were a former athlete who has had a re-injury experience, an athletic trainer, and an injury expert within the field of sport and exercise psychology research. By interviewing an athlete who has experienced a re-injury, the researcher employed field testing which is defined as “a technique where the preliminary interview guide was tested with the potential study participants” (p. 2961). By conducting the pilot testing with an athletic trainer and an injury expert, the research employed expert assessment to assess “the appropriateness and
comprehensiveness of the interview guide contents in relation to the aims and the subjects of the study” (Kallio et al., 2016, p. 2961). Based on the feedback from these individuals, the researcher modified and refined the interview guide to enhance the flow of the interview and the participants’ understanding of the questions. For example, a few changes were made to the wording of the questions, the order of the structured questions were changed, and then a couple probing questions were added.

**Member Checking**

Creswell and Creswell (2018) define member checking as “determining the accuracy of the qualitative findings by taking the final report of specific descriptions of themes back to participants and determining whether these participants feel that they are accurate” (p. 200). Member checking is important in assessing the trustworthiness of the data because since the researcher both collects and analyzes the data, there is potential for personal bias to influence the researcher’s interpretations (Miles & Huberman, 1994). Therefore, after the researcher identified the codes and themes, the researcher sent back the transcripts with the codes and themes to each participant for them to agree or disagree with the researcher’s interpretations of their experiences. Participants were contacted a second time if they did not respond the first time. Three participants responded and agreed to all codes and themes.

**Critical Friend**

The use of a critical friend was predominantly used to determine if data saturation was reached during data collection so that data analysis could begin. Creswell and Creswell (2018) describe a critical friend as someone who is “not familiar with the researcher or the project and can provide an objective assessment of the project throughout the process of research or at the conclusion of the study” (p. 201). The researcher’s critical friend has experience with research
and the field of sport, exercise, and performance psychology, and did not have any involvement in the development of the research project or data collection. The researcher had the critical friend read through each deidentified transcript. After reading through the final transcript, the researcher asked the critical friend if any new potential themes emerged in that last interview that had not been discussed in previous interviews. Both the researcher and the critical friend agreed that there was not any new pertinent information in the last interview. Therefore, the researcher ended participant recruitment and began data analysis.

**Using Rich, Thick Description**

Furthermore, Creswell and Creswell (2018) suggest enhancing qualitative trustworthiness by depicting the findings with rich, thick descriptions of the participants’ experiences. Schwandt (2001) describes rich, thick description as “to thickly describe social action is actually to begin to interpret it by recording the circumstances, meanings, intentions, strategies, motivations, and so on that characterize a particular episode” (p. 255). Thus, in the results section below, the researcher provided elaborate participant quotes and the researcher’s detailed interpretation of the participants experience to provide context of the phenomenon (i.e., re-injuries) being studied. By using this method, Creswell and Creswell argue “results become more realist and richer” (p. 200). This is important with a phenomenological approach because it helps to portray the lived experiences of coping with a re-injury.

**Prolonged Engagement**

Another technique to increase qualitative validity is to spend a prolonged time in the data to “develop an in-depth understanding of the phenomenon under study” (Creswell & Creswell, 2018, p. 201). This helped the researcher to more accurately understand the lived experiences of
the participants. Both the primary researcher and their research associate listened to the audio recordings and read the transcripts at least three times to become familiar with the data.

**Recognizing Researcher Bias**

In qualitative research, the researcher is often argued to be a primary instrument (Patton, 1990), therefore, reflexivity is important to reduce researcher bias. Creswell and Creswell (2018) explain reflexivity in terms of the researcher “reflect[ing] about how their role in the study and their personal background, culture, and experiences hold potential for shaping their interpretations, such as the themes they advance and the meaning they ascribe to the data” (p. 182). My bias manifests in my own personal experiences with re-injuries. I have sprained my right ankle six times within an eight-year timeframe and have had three ACL injuries over a ten-year period.

In regard to the multiple ankle sprains, I was often frustrated at the frequency of sustaining an ankle injury that resulted in me missing, on average, four to eight weeks away from my sport. With missing time away from my sport, I often worried about letting my team down and that my coaches would perceive me as always being injured which I feared would lead to losing my spot on the team since I could not contribute to the team or seem to stay healthy. I was envious of my teammates being able to compete while I was on the sideline. However, because of the shorter length of rehabilitation and time away from sport, as compared to my ACL injuries, I did not have any issues with my motivation to return to my sport.

For the ACL injuries, the first was a complete tear of the ACL that required surgical reconstruction. The second re-injury occurred 14 months after the first surgery, three months after I returned to competition. This injury was originally diagnosed as a rupture of the ACL graft; however, when undergoing surgery, the surgeon found the ACL graft was intact and only
stretched and the degree of stretch in the graft did not warrant surgical repair. The third ACL injury occurred nine years after the first index injury and was diagnosed as an insufficient graft due to the graft being severely stretched and partially torn, as well as a meniscus tear. This injury resulted in a second reconstruction of the ACL graft and partial removal of the meniscus. I underwent the rehabilitation for this injury throughout the study duration.

In regard to my ACL injuries, I had completely different experiences with each of the injuries. In the first injury rehabilitation experience, everything was smooth, and I had a relatively easy recovery. I was highly motivated to make a return-to-sport and continue my pursuit of playing college soccer. While I did experience fear of re-injury and was more cautious when returning to play, I truly never thought a second injury would happen to me. Thus, when the second injury did occur, before the realization of the false positive when I thought I would have to take another year away from my sport, I began to question if playing my sport was worth all the injuries. I was angry and feared my dream of playing college soccer was over. The idea of being away from soccer for approximately two years was devastating. I felt like the nine months I spent in rehabilitation for the first injury was essentially a waste of time as I was in the exact same spot after the onset of the second injury. Even after learning about the misdiagnosis, I did not have confidence in my knee and had a higher fear of re-injury since now I had injured the same knee twice. I decided to take my high school season off to strengthen the muscles surrounding my knee to regain my trust and confidence in my knee even though I was cleared to play that season.

The third ACL injury did not occur while I was a competitive athlete. Therefore, my concerns with a third injury were centered around the long-term health of my knee joint. With having three knee surgeries, including a partial meniscectomy, surgeons have already guaranteed
me that I will have osteoarthritis in my knee and will need a knee replacement surgery in the future. As I was familiar with the surgical procedure and rehabilitation process from my first injury, this made mentally coping with the surgery and rehabilitation easier, as compared to my first surgery. However, the physical aspect of the rehabilitation of the injury and progression have been completely different. As this injury recovery was more painful and a slower progression with many setbacks, whereas in the first surgery I experienced none of this, I frequently assessed where I felt like I should be compared to my first recovery experience, which led to me feeling defeated and frustrated. Since I was retired from sports, I did not feel the pressure to resume sport participation as quickly as I did in the first experience, and therefore, did not rush anything as I may have in the first rehabilitation experience. Overall, the third injury experience was the most challenging physically. Psychologically, this injury was difficult due to the fear that the number of surgeries and injuries to one knee will prevent me from being able to live an active lifestyle long term, as well as the numerous setbacks I encountered during my rehabilitation.

Thus, I have suffered numerous re-injuries that ultimately has influenced my interest in the topic of psychology of sport injury, specifically the psychological response to a re-injury. While I do not meet the inclusion criteria for this study (e.g., not planning on returning to sport, did not occur within the five-year timeframe for the two ACL reconstruction surgeries), it is still imperative that I acknowledged my own experiences with re-injury to not impose my perceptions and experiences on the participants, ultimately to help reduce researcher bias.

One specific phenomenological technique used to recognize researcher bias is bracketing (Peoples, 2020). Gearing (2004) defines bracketing as “a scientific process in which a researcher suspends or holds in abeyance his or her presuppositions, biases, assumptions, theories, or
previous experiences to see and describe the phenomenon” (p. 1430). Tufford and Newton argue that there are multiple methods of bracketing (2010). One method which I used was journaling (Peoples, 2020; Tufford & Newton, 2010). Prior to data collection, I journaled about my experiences with re-injury and my presumptions about the topic. The purpose of reflexive journaling is to “note a bias and then suspend it in an effort to look at it from various alternate angles” and to “think about the way they [the researcher] are thinking about the phenomenon in order to be less dependent on their subjective mind and to see the phenomenon for what it is” (p. 63). Essentially, by reflecting on my experiences, I increased my self-awareness to my assumptions and preconceptions to enhance my ability to suspend my experiences when conducting the interviews and data analysis.
Table 1

*Participant Demographic Information*

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Gender</th>
<th>Age</th>
<th>Year in School</th>
<th>Race</th>
<th>Sport</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vivian</td>
<td>F</td>
<td>22</td>
<td>Graduate</td>
<td>White</td>
<td>Track &amp; Field</td>
<td>DII</td>
</tr>
<tr>
<td>Stuart</td>
<td>M</td>
<td>20</td>
<td>Sophomore</td>
<td>White</td>
<td>Lacrosse, Disc Golf</td>
<td>Competitive Recreational</td>
</tr>
<tr>
<td>Rose</td>
<td>F</td>
<td>19</td>
<td>Freshman</td>
<td>White</td>
<td>Volleyball</td>
<td>Club</td>
</tr>
<tr>
<td>Gaby</td>
<td>F</td>
<td>23</td>
<td>Graduate</td>
<td>Hispanic/White</td>
<td>Soccer</td>
<td>DI</td>
</tr>
<tr>
<td>Audrey</td>
<td>F</td>
<td>20</td>
<td>Junior</td>
<td>White</td>
<td>Cheer, Gymnastics</td>
<td>Club</td>
</tr>
<tr>
<td>Raymond</td>
<td>M</td>
<td>19</td>
<td>Freshman</td>
<td>White</td>
<td>Cross Country, Track &amp; Field</td>
<td>DII</td>
</tr>
<tr>
<td>Lexie</td>
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<td>19</td>
<td>Sophomore</td>
<td>White</td>
<td>Soccer</td>
<td>DI</td>
</tr>
<tr>
<td>Isabella</td>
<td>F</td>
<td>18</td>
<td>Freshman</td>
<td>Hispanic</td>
<td>Soccer</td>
<td>DI</td>
</tr>
</tbody>
</table>

*Note.* Athlete column represents pseudonyms. F=Female, M=Male.

DI = NCAA Division I, DII = NCAA Division II.
CHAPTER 3

RESULTS

The following section will present the major themes and subthemes that were identified in relation to the research questions “what are the lived experiences of sustaining a lower body re-injury?” and “what are the psychological and emotional responses to sustaining a lower body re-injury?” Five major themes were identified: (a) prior experience and knowledge, (b) concerns, (c) motivation, (d) social support, and (e) coping strategies. Prior experience and knowledge consisted of three subthemes, familiarity, invincibility, and misdiagnosis. Concerns consisted of five subthemes, fear of re-re-injury, missing out, performance and fitness levels, repetitiveness, and identity. Motivation consisted of one subtheme, advice. Social support consisted of four subthemes, supportive behaviors, unsupportive behaviors, environment, and value. Coping strategies consisted of two subthemes, effective and ineffective coping strategies. Each theme and subtheme will be defined below, and the number of athletes and total codes represented in each theme and subtheme will be reported.

Prior Experience and Knowledge

The first major theme identified was prior experience and knowledge which contains a total of 242 codes from all eight participants. This was defined as how the athlete’s applied their first injury experience and knowledge to the re-injury experience. Three subthemes were identified: familiarity, invincibility, and misdiagnosis.

Familiarity

This subtheme includes 185 codes from all eight participants. Familiarity was defined as athletes being accustomed to the injury recovery process from their first injury (i.e., being familiar with the signs and symptoms, the pain, the rehabilitation exercises and protocols, and
the emotional challenges and demands of going through the same injury and rehabilitation for a second time) which influenced the athletes’ appraisals and responses to their re-injury experience in a positive manner.

When comparing the two injury experiences, it was noted that the athletes had similar emotional responses during the first and second injury, however, the athletes were better able to cope with the re-injury than the first injury. The emotions the participants identified with the first injury were scared (n=5), nervous (n=3), depressed (n=3), mad (n=3), frustrated (n=4), and shocked (n=2). For example, Gaby said “I was just like mentally not okay. I was definitely really depressed, like I was really sad when it happened, trying to go through it during rehab”.

Similarly, Isabella had a difficult time coping with her first ACL injury. When asked about her initial reaction to the injury, she stated “I cried for eight hours all the way home […] the first ACL tear I think was the hardest on me mentally and physically because I did kind of go through a bad time in my life and I just went dark and low.”

With the re-injury, the athletes had similar emotional responses as the first injury as the primary emotions experienced were scared (n=2), frustrated (n=4), denial (n=2), annoyed (n=2), and disappointed (n=6). When discussing similarities between the two injuries Vivian expressed, she experienced frustration with both injuries “I felt frustrated after both injuries […] It was very frustrating, like disappointed in myself that it happened again.” Lexie, another athlete who experienced two ACL tears, said she experienced denial with the second injury. When the re-injury happened, her response was “I was just in denial, honestly praying that maybe my knee just popped and it was just hurting or something, something that could have happened that made it hurt that bad, but that it wasn’t an ACL tear.” Gaby, who tore her contralateral ACL made a similar remark to hearing the same diagnosis “you can never prepare for the news that you are
tearing your ACL. Like hearing both times that I tore it, the same emotions, like probably even worse the second time. It’s just not something you can ever prepare for.” Comparably, when asked what advice she has for other athletes who have suffered a re-injury, Lexie laughed as she remarked “it’s going to suck just as bad.”

Even though the re-injury is still emotionally difficult, several athletes mentioned they were better able to cope and manage their emotions with the re-injury. For example, with her first ACL injury, Gaby said, “I was really at a low point, and I just didn’t know how to handle my emotions just because I’ve never gone through it before,” Later on in the interview, she stated “but the second time, I would say I had a better mentality”. Gaby attributed this to going through the rehabilitation before and being several years older which she expressed as:

“This second time, I just feel like I handled it so much more maturely. I think I grew up too, like obviously the first one, I was a sophomore, now I’m a senior. I’ve gone through so much already like in college. I was just mentally stronger, and I was physically stronger as well. So, I think overall the first one was harder overall mentally, but I think that was because it was the first time I have been through it.”

For Raymond who has a history of chronic and overuse running injuries, his prior re-injury experiences helped him to learn how to effectively cope with his re-injury. When describing his re-injury experience, he stated “I guess initially whenever I get injured, there’s like a split second of a pity part and that this sucks. But then I just go right into the mode of coping with it because I’ve already coped with injuries before.” He continued to say, “I just kind of go numb to it [suffering re-injuries] but I just kind of deal with it the same, but this time with just more experience” and “you get better, you’re just like more able to cope with it, not that you’re expecting it, but it’s just something that’s in your play book.”
Isabella, who as mentioned above, had a difficult time coping with her first ACL injury; however, she was able to learn from the first injury experience which helped her to more effectively cope with the second. This was portrayed in her interview when she expressed:

“I think I have accepted it more on this injury than I did the first one like quicker just because it’s like I can’t do anything about it and I can’t sulk about it because I already did that one time and it didn’t go well for me. Like physically, I think the difference is that I didn’t know anything the first time and I know more the second time.”

With the first injury, Isabella had a maladaptive coping mechanism of isolation herself and detaching from others. She noted how this did not work out well for her and applied this knowledge to her second injury:

“I think I haven’t had as many breakdowns or as dark times like to myself with this one because I have had people around me and things to do as my first one. And I am able to stay connected, I disconnected from my team the first one. I have stayed connected with my team this second one.”

While majority of the athletes expressed the index injury being more mentally and emotionally challenging, Audrey’s re-injury experience was much worse than her first injury due to the context of her re-injury also being a career ending injury. Audrey had re-fractured her growth plate in her foot which due to the extreme forces cheerleaders and gymnasts put on their bod with tumbling, was a career ending injury. As a result, her second injury experience was more emotionally taxing as indicated by her quote “oh it was a thousand times more difficult.” She went on to elaborate:
“I mean I was mad when it happened both times, but the second time I was just like nobody talk to me, like don’t come over here because I already know. Like the second time, I didn’t want to talk to anyone, I didn’t want to be with anybody.”

This highlights the importance of the injury context regarding severity. In Audrey’s case, the re-injury was a more severe, career-ending injury which influenced her appraisals and responses to the injury.

In addition to being familiar with the emotional and mental demands of a re-injury, the athletes were familiar with the pain and rehabilitation exercises. Rose, a club volleyball athlete, with dislocated her knee twice, described the rehabilitation for her second injury as:

“It was a lot of do what makes you feel comfortable and do what your body needs because I have a lot of experience with what this injury is [from] the first time. […] And I do a lot of that because that’s what helped me the most the first time.”

As a result, Rose claimed “I felt a lot more confident in being able to recover because I knew what I needed to do to get myself better.”

Raymond also mentioned how he was more confident with the second injury in his ability to return to cross country and track and field:

“It’s not good to get injured but having that same injury, you know how to deal with it, and you know how it’s going to behave. You’re kind of more confident with it. You’re like I know how to do this, but you don’t want to know how to do this because you don’t want to have been [re]injured.”

In addition, Raymond alluded to the second rehabilitation process being more independent and self-reliant:
“You know what to expect and I mean you just have more experience and the big thing if for me, like the first time around, they give you a way to treat it and you’re like okay and you do all the things, and then the second time around, you know what works and you know what doesn’t work. So, I mean I remember sitting there with the doctor or whoever and their telling me the stuff and I’m sitting there shaking my head like yeah but I’m just thinking to myself yeay that’s not what I’m going to do, that won’t work for me. So, I mean the second time you deal with the rehab like I said before, it’s more independent and you’re more confident on how to address it.”

Similarly, Stuart, a competitive recreational athlete who played a variety of sports, was more independent with his second rehabilitation. Stuart explained how the first injury influenced the second injury experience saying “knowing how to help myself rehab. Because you learn the first time, do it this way, do it the right way, work on it while you are at home. So that kind of helped me stay focused and stay on the right track.”

Likewise, Vivian, a NCAA DII track athlete who had re-injured her hamstring, had a similar experience in which being familiar with the rehabilitation exercises was beneficial:

“I came into rehab a lot more aggressive than the first one. The first one I was kind of hesitant just because I was very cautious about what I was doing. But this second one I kind of like already knew the drill, like it was similar stretches and exercises I’ve already done before. So, I was a lot less cautious with it. I was a lot more aggressive.”

Many participants also mentioned that being familiar with the pain helped their rehabilitation with the re-injury as they knew the pain they would likely experience and were able to manage their pain levels and differentiate between normal pain and abnormal pain. For example, Gaby, a NCAA DI soccer player who had two ACL injuries, portrayed her first injury
experience as “it was just the pain, like I never felt it, I’ve never had gone through surgeries, so it was a weird feeling.” Conversely, with the re-injury rehabilitation, she said:

“The time was so much shorter just because I knew that feeling, like I wasn’t scared of the pain. So, I think I also knew the process of the rehab and that helped me to be a little ahead of the game. So, I knew I could start tiptoeing with my crutches and I knew it wouldn’t hurt me and I would be fine doing things on my own. Like I already knew a lot of the exercises that I would do the first week, so I started doing it early.”

Another DI soccer player with an ACL re-injury, Isabella, also mentioned the benefit of being familiar with the pain:

“Going through it once, you know what it going to happen, so that is kind of the worst part of it, but that can also be a positive because you know the tolerance you can have, you know what to expect, and you have how much to push. I mean it sucked though leading up to surgery because you know how painful it is going to be after surgery, so that was something you dreaded, but having gone through it now, I am able to push myself even more because I know what type of pain I am feeling, so like how much my body can actually do […] But with this surgery, I know the pain I am going to experience so it is like I know I am going to have to push through it whereas my first one I would have stop because it was painful. But this one, I am like I just got to suck it up.”

In addition to being more familiar with the pain and rehabilitation exercises, seven of the athletes discussed being more familiar with the signs and symptoms of the injury which led to them being more able to self-diagnosis their injury the second time because it felt the same as before. For example, Rose stated “I felt the same tendon that I tore the first time, I could feel it like stretching and it was straining. I could feel it when I was walking, and I actually knew what
that felt like now and it freaked me out.” Stuart mentioned “I just could tell it was the same tear, same injury. It was the same pain again.” For Isabella, she described her second ACL injury as “I knew like immediately […] I was just trying to calm myself down because I knew what happened and I knew when I got up to try and walk, I was like okay maybe it’s not and then I felt my knee shift and I was like I just did my other one.” Gaby also was able to recognize the signs and symptoms of her ACL injury when she stated:

“Before the MRI, like the two to three days before I took it, there was sometimes where it felt like my knee was giving out and I was like oh no, like that’s one of the signs that it could be your ACL just because of the way you would move. Like I remember, I was sitting on the couch and then I stepped and turned, and my knee gave out and I was like oh no. So, in my head I was mentally preparing that it could be my ACL.”

*Invincibility*

Invincibility was represented in 84 codes by all 8 participants. This subtheme was defined as the athletes thinking they were invincible after the first injury, never thinking a re-injury would happen to them, but then when they did suffer a re-injury, they realized they were in fact not invincible. This led to athletes blaming themselves for the second injury and taking the second injury rehabilitation more serious and cautious.

After Gaby’s first ACL injury, she was aware of the re-injury statistics following ACL surgery but never thought it would happen to her. She stated:

“I had a lot of people tell me that once you tear it, like your one ACL, like you have a big chance to tear the other one. And for me I was like that is not going to happen to me. It was completely out [of the question], like I got hurt because I got hit, like it was a contact injury. It wasn’t my myself [that caused the injury]. So I was like there’s no way I can get
hurt again because I’ve always been so strong, like I lift, my legs are strong, like I’m constantly lifting and fit, there’s no way. Like let’s say someone hits me bad like maybe okay. But there’s like no way.”

In elaboration, she further noted “like you would never imagine that it would happen to you until it happens to you. Like seeing all my friends that have torn it, I was like ‘that’s not going to happen to me.’” And then when she did in fact tear her contralateral ACL, she expressed “I was like these people jinxed me. Like are you kidding me?”

Audrey, who had a career ending foot injury, also never thought her doctors warning of a second injury were serious. She stated:

“I really thought the doctor was just trying to scare me, because I had told the doctor I waited like three weeks to come in, so I thought at the time he was just trying to scare me like ‘no when something like this happens you need to come in immediately. Don’t put it off because these could be the consequences,’ I didn’t think he was serious about it.”

As a result of her denial of the possibility of a re-injury, she did not take her rehabilitation as serious for the first injury. This was demonstrated when she said, “I didn’t listen, I didn’t follow the doctor’s orders, I just kind of did my own thing as if I was invincible and nothing could happen to me.” Furthermore, she stated “I think if I would have been more honest with the doctor, there would have been setbacks, but I just wanted to get the doctors to sign the papers so I could go back to practice. Audrey was more focused on getting back to competing that she lied to her doctors and about the pain she was experiencing. When she suffered the second injury and realized the doctor wasn’t joking, she said her initial reaction to the injury was “I was mad at myself because I didn’t listen to the doctor and I kind of just tried to get my way out of it” and “I was disappointed in myself because I knew this was a possibility and I wasn’t taking all the
precautions they advised me to.” Subsequently, she took the second injury more seriously as she learned the hard way. She described her second rehabilitation experience as “I didn’t lie to the doctors this time. So, it was much longer. It was four weeks longer than the original time. But I think after I finished it, I definitely felt more comfortable.”

Stuart also blamed himself for the second injury, stating “I did it to myself this time because I overused it, whether I want to admit it to myself or not, I knew I had played too many sports, did too much walking at work and eventually something was going to happen, and sure enough it did.” Similarly, Vivian had a chronic, overuse hamstring re-injury said, “it was very frustrating, like disappointed in myself that it happened again.” Isabella also expressed being disappointed as she described her initial reaction to the re-injury:

“I cried […] not because of the pain, it was more because of like disappointment that I caused it to happen, like you always want to go back and if only I didn’t go in for that tackle, like I wouldn’t be in this mess. So, it was almost like replaying it in my head and being like that was my fault and I could have avoided that.”

**Misdiagnosis**

Five athletes disclosed they were misdiagnosed their first injury. This subtheme has a total of 18 codes and is defined as the impact of being misdiagnosed during their first injury experience had on the re-injury experience as having a re-injury (i.e., prior injury history) resulted in the second injury being taken more serious by sport personnel (e.g., athletes, coaches, athletic trainers) and leading to a quicker and more accurate medical evaluation of the re-injury. Gaby explained her frustration with being misdiagnosed as:

“Yes, it was super frustrating because I was like ‘okay what am I doing rehab for right now’ because I was doing a bunch of rehab, like is it even helping myself or is it making
it worse? Because like I said, I didn't know what it was. They didn't know either, like [doctors name] at the school had checked me out before the orthopedic surgeon checked me out, and also like three trainers checked my knee out and they all said like ‘oh we don't know, like it's not your ACL, like it's fine.’ And a big reason why they said that is because they couldn’t feel the shifting that usually is felt with an ACL. Because I had, like I told you, I like worked out so hard during the summer, like I played a lot of my freshman year, like grew up my muscle, and they said like my muscles were so strong that it was like the only thing holding my knee together, which is like crazy I was like oh wow okay. It was just really frustrating because then the orthopedic surgeon when he did look at my knee like a month later after my MRI he felt it immediately and I was like okay so like three people like checked it and they said nothing, they said it could have been a bone bruise, meniscus, or my like MCL, like those are the three and I literally asked them every day, I'm like ‘are you sure? Like should I be preparing for an ACL tear?’ They said like the worst it could be is meniscus, like you'll be out for 6 weeks, like you'll be back by spring. Like it sucks but I'll be back in a couple weeks, like that's fine. So, then I was like ‘okay, like what can I do?’ and even the doctor was like you can run straight, like no cutting just in case. But I would go on runs during practice, just straight running. Like I was literally running. There was one time I ran for an hour. I was doing this with a torn ACL, and they didn't even know. I was so frustrated. I think that's why my first injury was so hard because I was like ‘are you kidding me?’ I've been doing all this but now I have to go get surgery and lose muscle and go through the whole rehab process again. So, I think that was the hardest part of these injuries. It's like the first time, it's like not knowing but like for so long, almost a month [of not knowing].
As mentioned above in the concerns theme, missing time away from their sport is a disappointment, and with a misdiagnosis, it prolongs the time they are unable to practice. Gaby alluded to this when she said, “because then it’s six weeks [original meniscus diagnosis] compared to six months [ACL injury]. That’s what really takes a turn. That’s a long period of time.”

When Gaby first tore her ACL, she said the athletic trainers responded to her injury by “they were like we will just tape you up and [you can] start playing and see how it feels.” Whereas, after her re-injury, the athletic trainers were more precautionary and got the athlete an MRI much sooner compared to the first injury, “he [athletic trainer] is like ‘okay let’s just sit you out for the rest of the game, we will get you an MRI this weekend.” Vivian also had a similar experience in which she got more immediate evaluation with her second injury given her prior injury history. She stated:

“I just kind of let him [coach] know like ‘hey I felt this’ and he knew my history with my injury, so I was comparing it to that like saying it wasn’t as extreme but like it’s definitely something I feel like I need to go get checked out. So, I went and got it checked out immediately after practice.”

Similarly, Isabella also had a misdiagnosis with her first ACL injury. She described this experience as:

“They told me I sprained it so I just had to do PT [physical therapy] and then I thought I was going to be able to play again. And the first I was cleared to do warm up and something happened during warm up and I told my dad something is not right. So, then they ordered an MRI and it was torn.”

She described her response to this misdiagnosis as:
“I almost had a low and then I had a high and then I went back down because I was like great, I just wasted three months of my life because I could have had surgery and stuff like that. So that was hard because then I was like I am going to be out of soccer longer and it was just frustrating.”

**Concerns**

The second major theme identified was concerns which contained a total of 171 codes from all eight participants. Concerns was defined as the worries the athletes had after suffering the same injury multiple times during the rehabilitation and return-to-play phases of the injury process. Five subthemes emerged: (a) fear of re-re-injury, (b) missing out, (c) performance/fitness levels, (d) repetitiveness, and (e) identity.

**Fear of Re-Re-Injury**

This subtheme consisted of 58 codes from all eight participants. Fear of re-re-injury was defined as the anxiety and concern of re-injuring the same body part for a third time upon returning to their sport. As alluded to in the invincibility subtheme mentioned above, several athletes discussed how they felt they were invincible after the first injury and that a second would never happen to them. When asked if they experienced fear of re-injury following the index injury, four participants denied having any fear; however, all eight participants experienced more fear of a third injury following the re-injury.

Rose explains her fear of re-re-injury as, “even until this day, I’m still scared to dive sometimes because I don’t really want it to give out on me.” This fear has led her to be more equipped if another injury were to happen, “my mind is always like okay I need to have my brace, I need to have my phone ready and charged in case something happens.” Isabella, who is still in the rehabilitation phase of her second ACL injury, is already developing a fear for when
she returns to soccer as she raises the questions of “am I going to be able to work to get to where I need to be or is this going to happen again? Like a slight fear would be is this going to happen again to me like once I get back?”

Stuart also reported having greater re-injury anxiety after the second injury which was influenced by the context of the second injury being more severe. He was able to rehabilitate his first meniscus injury without needing surgery, however, the second injury required surgery. He explained his fear of re-re-injury as:

“Definitely more so afraid of it now after the second injury. […] I had the surgery, I now know what happens if it happens again, still got three more menisci that can get torn, so definitely still worried about it getting torn, trying to be more careful with what I do now because I don’t want to have to go through another surgery.”

Comparably, Vivian also discussed the effect of sustaining the same injury and how that influences the severity of the fear of re-injury experienced. She explained:

“This is like the second time I’ve had to deal with this in my college career alone. […] I had like that fear in my mind of like okay there’s a chance I’m going to do this again just because I’ve already hurt it twice and it’s obviously one of my weakest muscles apparently since I keep hurting it. So yeah, I was definitely scared of hurting it again and like anytime I had any tightness down there, it would freak me out.”

**Missing Out**

In a total of 45 codes from all eight participants. This subtheme was defined as the athletes’ having concerns with missing time from their sport, missing out on certain sport events, and being sidelined and isolated from their teammates, due to the length of recovery that restricted physical participation in their sport. For instance, Gaby had an ACL injury and said, “it
was just frustrating having to wait that long to play again because it’s not a quick injury, it’s like six to nine months, so it’s like you are counting down the says until you can play again.” Isabella stated the most challenging part of going through the same injury twice was “knowing how long I am going to be out of soccer again. Because it was hard then and you want it to go by so fast, but it doesn’t. Like it is actually a very slow process.”

This worry of missing out from their sport was exacerbated by watching their teammates play while they were physically unable to. Gaby described this as, “I got to sit out in practice and just watch everyone play, or I have to stay home when they’re on an away trip. Like that was just so hard because I just wanted to be out there so bad, and I just literally couldn’t.” Likewise, Lexie portrayed:

“Being in an environment where you are around soccer every day and have to watch everyone else do it and you not be able to go out there and play, and you have to watch everybody, because I have to go to every single practice every day because I am still a part of the team, still have to go and support, and it just was kind of soul crushing just sitting there watching everyone take for granted what you can’t have and hearing them complain about practice of ‘I don’t want to run this sprint’ or ‘I don’t want to do this’, or ‘I don’t want to practice today’, and I was like I would sell my left leg to be able to practice today, like come on!”

While time away from their sport in general was a concern, the timing of the injury in relation to missing out on certain events, such as senior night, game days, or state meets, was mentioned by several athletes. For example, Gaby who had her re-injury happen early in her senior year, stated:
“The first thing I thought is like my senior year is ruined, like I had been with the same girls since my freshman year, like I won’t be able to finish out with them. And I was so sad like I said because I wanted to finish out that year with my girls I came in with and really enjoy it with them.”

Rose, a club volleyball player, was not going to be cleared to return to play before their tournaments ended which she expressed her disappointment as, “I probably won’t be ready in time for tournaments, so what’s the point?” Raymond was concerned with missing his state meet, “then the state meet came along, I couldn’t even walk so I couldn’t do that, so that was pretty hard.”

Another concern with missing out was the athletes being isolated from their teammates and missing out on the social aspect of their sport. Raymond said the hardest part of his re-injury was “being away from the team, you feel disconnected.” He went on to elaborate:

“When you get injured, you get completely separated from the whole team. You almost get detached so you’re almost like socially isolated. So that’s a hard part, is just being away from a group that you’re always with, so you feel like you kind of lose a bond because you do workouts with each other, you work hard and you both kind of like struggle together, so that’s kind of what connects you to the team, like I don’t have any connection to these guys just because we’re on the same roster, it’s because we train together. So, when you stop training together, you might still be on the same team, but it’s like you didn’t go through that work out with me so I mean you can’t relate to me as well.”

Performance/Fitness Levels
This subtheme contained 25 codes from six athletes. Performance and fitness levels was defined as concerns relating to not being able to return to their sport at the same performance and fitness level as the athlete had prior to the injury. For example, Rose said, “the biggest mental struggle was I’m not going to be as good as I can be.” Similarly, with Gaby’s first ACL injury, she said she was most concerned with if she was going to be able to play at the same elite level:

“Two to three of my friends tore their ACLs and they never came back as good, I guess. They changed completely as a player. I think, I don’t know, because they were scared, they didn’t have the proper treatment, or I don’t know. But the first injury, I was actually really scared because I didn’t know how I was going to come back, I didn’t know if I was going to be worse or better. Seeing that it changes so many people’s playing style scared me because I had always been a player to stand out in front of everyone, like be aggressive and not really care, just be myself. And that’s what I was most afraid of the first time, like am I going to be the same? Will I be worse and not play the rest of my years?”

Gaby mentioned that she was able to return to her same playing style and performance level after the first injury which gave her more confidence upon returning to play following her re-injury. This was described as:

“I already had that mentality of okay I already came back and it didn’t change the way I was as a player or anything, like it actually made me a better player because I cherished the game.[...] it was mostly because I had gone through it before and I knew that it wouldn’t change me as a player.”

For Audrey who had a career ending injury, her most challenging part of her re-injury was:
“The worst part is being told you aren’t going to be able to do that sport again or you aren’t going to be able to do it to your standards. Like sure you can do a handstand, a cartwheel, a forward roll, but that is nowhere near where you were at.”

In addition, many athletes were concerned with losing their fitness. This was predominantly mentioned in the track and field and cross-country athletes. For instance, Raymond commented, “that’s the hardest part when you go into a race, and this is maybe a month into your injury and you’re still not in shape and you know that you’re going to run super hard but you’re not going to be anywhere near your best.” Similarly, when asked about how she felt about returning to running following her first injury, Vivian said “I was happy to be back finally, but at the same time I realized how much it put me back, so I guess frustrated again [that] I still have to go through all this work to get back to where I was fitness wise.” Her fitness concern influenced her re-injury by prioritizing her fitness during her recovery and not just treating her hamstring injury:

“The second one it was more of, I mean of course treating the hamstring, but also maintaining my fitness and stuff were a big focus […] like not wanting to come back and just kind of start over again. I wanted to maintain some of the fitness I had coming into it.”

Repetitiveness

A fourth subtheme identified is repetitiveness which was discussed by seven athletes in a total of 23 codes. This was defined as the effect of sustaining the same injury multiple times and having to repeat the same rehabilitation exercises for a second time had on the athlete’s overall experience with the re-injury. For example, Gaby said:
“It just felt so repetitive in a way. I had gone through it once and I was just like ‘okay not going to have to do this again; and then going through it again was like ‘ugh’ but it was now my other knee and I am like ‘oh my god, holy crap, again?’”

She expanded saying, “that’s what sucks about this injury and having to do it again, and how repetitive it is in that way. Like wow, okay I missed a whole year, what’s next? Let me count down the months again.”

Similarly, when asked what the most challenging part of going through the same injury and rehabilitation for a second time was, Stuart alluded to the repetitiveness of it saying:

“Most challenging part I think was just honestly dealing with it. Just knowing, especially on that second one and just knowing I already went through this, it was frustrating, like I feel like I already took care of it, like I already did everything correctly, and then I’m experiencing it again. So, it was definitely challenging just repeating the same process that I went through two years prior.”

Lexie also had a similar response, saying:

“Honestly because I had just worked so hard and I was only a year and a half out from my first surgery, so with not even being fully out for what someone would actually probably be in their recovery where they would finally be playing full games and then just having to start all the way over again, it was heartbreaking, it was really bad.”

When describing the rehabilitation for the second injury, several participants discussed the repetitiveness of doing the same exercises as the first injury. For example, Stuart said, “rehab was much of the same almost after the surgery. It was back to PT (physical therapy). I went back to the same physical therapist from the first time, and so we did a lot of the same stuff per say.”

Similarly, Lexie said:
“I would say the worst part with both of them in general is because it’s such a long recovery and you do the same thing over and over again every day, you feel very stagnant at times, like you’re not moving and you’re not progressing because you’re just doing the same therapy, the same exercises, the same routine over and over again every day and it gets mundane.”

However, she did think the repetitiveness of the rehabilitation was beneficial, saying:

“I think that’s a good thing is that everyone has a set line of protocols so you’re doing the same thing instead of everyone having a different idea of what they think should happen because this has shown that this works, and this is the statistics, and this is what we do.”

**Identity**

The subtheme identity was defined as concerns relating to the loss of their athletic identity when dealing with an injury and concerns with others’ perceptions of the athlete after suffering multiple injuries. This category includes 11 codes from five participants. In regard to athletic identity, four of the athletes were concerned with feeling like they lost a part of themselves when they were physically unable to participate in their sport. Lexie stated the most challenging part of her re-injury experience was:

“I would say the lack of being able to express myself because as someone who’s been a student-athlete or just an athlete in general for so many years and I can’t do the one thing that has given structure in my life for so long. I would say that’s the hardest thing because one way I express if I am stressed or if I’m angry or I had a bad day, I go and I run because it just clears my head. And I can’t do that.”

Likewise, Raymond said, “mentally, I would get used to relying on running because you just get used to running like eight miles a day or something, and when you just stop it’s weird, it’s like
you get withdrawals or something because you’re used to working super hard.” Audrey also commented, “I have been in the gym since I was three years old so it was really weird for me to get out of school and go home. Like I didn’t know what to do with myself, like I would go home and just sit and stare at the wall. Like what do I do now?”

Concerns regarding identity also related to how athletes felt they were a ‘weak link’ or identified as their injury due to the fact they hurt the same body multiple times. Rose described this as, “it hit my ego a little hard. I kind of started thinking a little bit worse about myself because I was never really the girl that got injured. I was the one that just showed up and played. So, once I got injured, I was like ‘oh I’m the weak link now.’” She continued to explain:

“It definitely makes it a little worse because having it once and then overcoming it, you’re like okay this big thing happened to me and I overcame it, I’m awesome. And that’s genuinely the mentality that I had. I’m like okay, I’m pretty great if I can come back from something like that and still be able to play. But it happens again and you’re like wow I’m weaker than I thought.”

Motivation

The fourth major theme identified was motivation which contains 38 codes from seven participants. Motivation was defined as the source of the participants desire to repeat the injury rehabilitation process for a second time and return to their sport despite the inevitable risk of suffering another injury. Two of the seven participants acknowledged they had thoughts about quitting or were less motivated to return to their sport following a re-injury. Rose expressed this as, “if I have an injury that is recurring and that is setting me back, it really makes me not want to play” and “it’s hard to sustain more than one injury and still want to play.” Lexie also reported feeling less motivated during her re-injury, saying “I think with my first one I was a little bit
more motivated to get back and this one, I’m kind of just at acceptance and whatever happens
kind of happens.”

Others identified their love for their sport and their competitive nature as their sources of
motivation. For example, Gaby said:

“For me, I just love the game so much and I want to keep playing for as long as I can. I
just didn’t want it to end that way, so I wanted to write my own story and word hard and
be back playing. Playing the game really makes me so happy and I just knew that when I
came back, I would enjoy it and cherish it.”
Stuart responded:

“A lot of it is my competitive nature [...] I have always been playing sports, I am always
going to want to play sports, so it is hoping I don’t get re-injured trying to be careful, but
also I want to get out there, I want to win, I want to do better.”
Raymond stated, “I like running too much so there’s no way I could stop. So I would probably
work through quite a bit of injures before I stopped running.”

Advice

A subtheme of motivation was advice which is defined as the lessons learned and
perspective gained after going through a re-injury which can be applied to other athletes who
suffer a re-injury as a source of motivation for them. This subtheme included 13 of the 38 codes,
from 6 participants.
When asked what advice Gaby has for other athletes who have had a re-injury she said:

“To just keep going, like you can come back and come back even stronger, because that’s
what I did. Two injuries later and I am top scorer, I am captain of the team, I became all
team [conference], and I was the only one from [school name] who has won it since 2016. So, everyone is like has she even gone through these injuries?”

She continued to say, “I am cherishing every moment, you never know when it is going to be you last time playing, and I learned that by far with these two injuries.”

Similarly, Isabella, who is still in the rehabilitation phase of her second ACL injury, gave the advice of:

“Like as cliché as it sounds, don’t give up. I have always held onto the comeback is better than the setback, and seeing my first injury, my comeback was a good comeback. […] Like even though right now it is hard to see the light at the end of the tunnel because I have already been through it once, I know there is a light at the end of the tunnel, so it is just holding onto that hope that you are going to be fine in the end.”

**Social Support**

As social support is already well-defined in the field of sport, exercise, and performance psychology, the major theme of social support will be defined as the pre-existing definition, “an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the wellbeing of the recipient” (Shumaker & Brownell, 1984, p. 11).

In relation to sport injury, social support refers to the support received or not received from others that assisted or hindered the athlete in coping with their injury experience. This major theme had a total of 92 codes from all eight participants and was divided into four subthemes, supportive behaviors, unsupportive behaviors, environment, and value.

**Supportive behaviors**

This subtheme consists of 37 codes from all eight athletes. Supportive behaviors was defined as the types of support perceived by the athlete to have made a positive impact on their
injury experience. Examples of supportive behaviors included providing tangible assistance, others checking in on the athlete, providing reassurance, allowing athlete to stay involved at practices, and having teammates who have been through the same injury before.

For example, Rose said, “my teammates were all my best friends so of course they were willing to drive me around, help me out, bring me stuff, bring me my work and stuff like that when I couldn’t” and “[brother’s roommate] and my boyfriend are the ones that took me to the ER, helped me out of the car, and stayed with me all night.”

Gaby appreciated being reassured by her athletic trainer, saying:

“When I started playing with people, I was like ‘okay, am I going to be okay?’ and then my trainer reassured me, like I talked to him and was like is this normal? He said ‘yes, like you just went through a whole year of rehab and surgery, like it’s going to take a while to feel normal again.’”

Vivian also felt supported by her coach saying,

“Him helping me look at the bigger picture of things […] like just sitting down having a conversation, he’s like worst case, you don’t compete the indoor stuff, but you still have a whole outdoor season, you still have three more years after this freshman year […] like seeing there’s more than just right now to look forward to.”

Several athletes mentioned the asset of having teammates who have been through the same injury before. For example, Lexie commented, “what helped is that there were several other girls on the team that had torn their ACL or ACL several times and I think those girls were my biggest support system.” Similarly, Gaby said:

“I had another teammates that had torn her ACL […] but this was her third ACL injury. She obviously had a lot of experience too and two week later I tore mine. So, we were
two weeks apart […] so we were both pushing each other. Like she was helping me so much because having had two of them, I’m like ‘oh my god, this is her third one tearing it. This girl is killing it’ like she started walking so quick and was like ‘keep up with me, come on’ and then we were both pushing each other and […] we were both talking a lot about our experiences.”

Athletes also appreciated when coaches allowed them to come to practices so they could stay involved and connected with the team. Audrey said:

“They didn’t tell me ‘Oh you are injured, you can’t come to the gym.’ They always offered me to come to the gym, you can give your input on the girls, you can do conditioning, you can do flexibility, bars, like anything that doesn’t involve using your foot, you can do it.”

Rose also mentioned her coach being a support system for her, saying “she tried to do everything she could to help me. She provided me with ankle weight during practice so I could get my muscle back up, so I wasn’t completely left out of practice.”

**Unsupportive Behaviors**

This subtheme consists of 24 codes from seven athletes. Supportive behaviors are defined as the types of support perceived by the athlete to have made a negative impact on their injury experience. Examples of unsupportive behaviors were others questioning the athlete being injured and lack of knowledge regarding injuries.

Regarding other’s downplaying or questioning the athlete’s injury, Raymond described his experience as:

“I found with running injuries, it’s not definite as opposed to other sports where you can say like I broke a bone or I tore a muscle […] but they are really abstract injuries where
they are not black and white. There is such a degree to them that you can run through them at some stages but there’s other stages that you can’t even walk, so it’s hard explaining to everyone, like oh this is what I injured, this is why I can’t run, it’s like well why can’t you run through that? Like well I have been. So that’s the hard part with that.”

Vivian, also a running athlete, was frustrated with her coach saying, “I think I did lose a little bit of trust in him just because he didn’t believe my word like saying, ‘hey, this actually hurts’ and it’s not just me being a wimp.” She also experienced frustration with her teammates, saying “I just feel like they were questioning it, like asking if I was actually hurt, or was I just trying to get out of practice.” Comparably, Isabella also felt unsupported by her teammates at times, saying:

“That was the hard part too dealing with all my teammates being like ‘you are fine, it is going to be fine, you don’t know for sure, like wait until you go to the doctor’ and it’s like, when you do it once, you know when you do it again. So, it was trying to be like yeah but, I had no hope because I knew what I had done.”

Another type of unsupportive behavior for Raymond was his athletic trainers having a lack of knowledge regarding chronic, overuse running injuries. When asked what advice he would have for athletic trainers who are working with athletes who have had a re-injury, he noted:

“I just know for overuse injuries, kind of being more informed on it because I know like our trainers, when it comes to overuse injuries, I don’t think their experience is pretty good with it. They are good at treating other impact injuries, but I mean there could be a lot more taught in that field of how to treat overuse injuries, because I swear it’s always take time off, take ibuprofen, and ice it.”
He continued to say, “I’ve had quite a few misdiagnoses from trainers and advice that just
doesn’t really work.”

**Environment**

This subtheme had six codes from two participants and was defined as the difference in
support received for athletes who had their first injury in high school and their second injury
during college. The athletes favored the support received in a college environment where they
had access to an athletic trainer daily, whereas with their first injury, they worked with a physical
therapist once or twice a week. For example, Lexie discussed:

> “With my first time, when I went to rehab, I had several different people working on me
and I felt like at some points like what I knew I needed, knew I wanted, like I wasn't
heard at times because I never had the same trainer. With this one because the same
individual is working with me time and time again, every day, she knows what my body
needs, she knows if I'm saying I'm having a bad day, it's not a good day because I don't
just say that to ever say that. And if I'm like hey my hamstring is a little tight today or hey
my quad really hurts, she will be like okay we will fix it before anything bad happens.
And in the first one, they would be like yeah that's normal and then usually would wait a
few days and I would be like my hamstring is still tight, it really hurts they'd be like okay
um now let's check it out so it's more so immediate versus I had several people working
with me versus a single individual.”

Isabella had a similar experience saying:

> “And I think the PT, like nothing against them, but I think every time I was like ‘oh, I am
in pain’, they would pull off and we just iced and thinking about it, if you don’t do much
one day, that is then only two other days of the week that you are actually working. And
with this one, at least with the rehab here, I don’t really care if I am in pain, I am working every single day so that is at least five days versus two or three days that I would work with my PT at home.”

**Value**

This subtheme consists of 25 themes by seven athletes. Value was defined as the significance and appreciation of the social support received and how the support they had impacted their injury recovery experience. For example, Gaby said, “I owe him [athletic trainer] so much because he helped me, like he was there for me 100%, got me back 100% both times, like I literally owe him so much.” Lexie also commented:

“I think I've got a great environment honestly. I have a whole team of support system. I have a whole staff of support system, all of athletics is behind me, coaches, trainers, teammates, athletic directors, athletic supervisors, there's always people we can talk to, and I think that's what honestly helps everything.”

Rose also noted the impact her friends and family had, saying “if I didn’t have them to help me and to help take care of me, I probably would've texted my coach and said sorry I probably won't play this semester.”

**Coping Strategies**

This major theme consists of 46 codes by all eight athletes. Coping strategies was defined as the actions the athletes personally took to cope with the injury experience and being unable to partake in their sport. This major theme was divided into two subthemes, effective and ineffective coping strategies.

**Effective Coping Strategies**
Effective coping strategies was defined as healthy and adaptive actions the athletes personally took to cope with their injury experience. This subtheme had 41 codes from all eight participants. Examples of effective coping strategies include goal setting, cross training, maintaining a positive mindset, and finding new hobbies.

Four athletes mentioned using goal setting that focused on small milestone goals to cope and stay motivated through the long recovery process. For example, Lexie explained her mindset as “you can’t let yourself get down about it because you’re not progressing. Every little thing is a win. I biked 0.2 miles more than I did yesterday, that’s a win.” Two athletes coped by cross training, meaning they engaged in physical exercise that did not involve or would not cause further injury to their injured body part. Raymond explained this coping strategy as “for coping strategies, I just ended up cross training a lot. Just using a lot of my energy biking and stuff.”

Others had the coping strategy of prioritizing having a positive attitude and outlook on their re-injury experience. For example, Gaby used effective self-talk to remind herself that she has been through the rehabilitation once before and she can do it again, “the second time, I had the mentality of ‘I’ve been through it once, I know how it feels, I know the pain, I will be okay, I will come back and be stronger.” Isabella had a similar mentality saying, “like even though right now it is hard to see the light at the end of the tunnel because I have already been through it once, I know there is a light at the end of the tunnel, so it is just holding onto the hope and that you are going to be fine in the end.” Lexie also prioritized focusing on the positives. She gave the advice of “don’t focus on the negative, focus on all the positives that you have going for you instead of all the negative things.”
Another prominent coping strategy amongst several participants was prioritizing and being proactive with the rehabilitation phase so they could forget about the injury once they returned to their sport. Stuart described this coping strategy as:

“I just focused on get the rehab, just get it done. So that way when you get on the team, once you are back conditioning, you can build it back up the right way, and just be as prepared as you could be for the year. Because I didn’t want to deal with the injury too much once the season started. So, I just turned the focus mode on getting better.”

As mentioned in the identity concerns subtheme, a sport injury results in more free time for an athlete which can be difficult for athletes to adjust to. Lexie coped with this by finding new hobbies to occupy her time:

“I have taken up several new hobbies, photography, I found out I can draw, I really like reading. […] And just found other things in my life that I genuinely enjoy. […] And I think that also is good because it sets me up for after college soccer when I won’t be playing anymore, at least I know some of my interests that I will be interested in and not feel detached from what I’m so socially used to.”

**Ineffective Coping Strategies**

This subtheme had five codes from two participants and was defined as actions the athletes personally took that did not help them to effectively cope with their injury. While most athletes reported healthy coping mechanisms, the one maladaptive coping strategy two participants disclosed were detaching from others and holding in her thoughts and feelings. Lexie disclosed:
“I kind of drew away from everyone because soccer was everything and it was my outlet, like just to get away and have that time everyday away from everything. And then I lost that, so I was kind of alone by myself wasting time all the time.”

She continued to state, “I am very much like where I stuff things and then it all comes out and then I am good and then I continue to stuff things and then it all comes out.” Similarly, after Audrey’s second injury, she said, “the second time, I didn’t want to talk to anyone, I didn’t want to be with anybody.”
CHAPTER 4

DISCUSSION

The present study explored college athletes’ perceptions and lived experiences regarding the emotional and psychological response to a lower body re-injury. Although the injury experience is highly individualized depending on personal and contextual factors (e.g., severity of injury, personality, athletic identity) and each athlete had their own unique experience, there were shared experiences amongst the participants. This chapter will present those similarities and major findings in relation to current literature. Practical implications for sport personnel (e.g., coaches, athletic trainers, sport psychology consultants) will be discussed to help improve the injury experience for athletes unfortunate to suffer a re-injury. Limitations and future research directions will also be discussed.

Key Findings

As the integrated model of psychological response to the sport injury and rehabilitation process (see Appendix A; Wiese-Bjornstal et al., 1998) suggests, there are personal and situational factors that influence the cognitive appraisal, emotional responses, and behavioral responses to an injury, in turn affecting the recovery outcomes. One of the personal factors listed in the model is injury history. With a re-injury, athletes have prior history with the exact same injury and rehabilitation protocol which in turn affects the appraisals and responses to the injury. This was demonstrated in this study in which the prior experience and knowledge from the first injury was perceived to be both advantageous and a nuisance.

Having prior injury experience was an advantage as it seemed to help the athletes cope with their injury and progress through their rehabilitation quicker and more confidently. Four of
the eight participants specifically noted their first injury was their first major injury or first-time having surgery; therefore, they were concerned with the unknown of not knowing what to expect in general and the pain they would encounter. Conversely, with the second injury, the athletes were able to mentally prepare for the emotions they experienced. This was also supported in Tracey (2003) in which participants with previous injury history reported knowing what to expect in regard to the injury experience had “a calming effect that allowed them to stay positive and focused on recovering” (p. 287). Similarly, in a prospective case study, Carson and Polman (2008) noted their participant had prior injury experience which was viewed as a benefit as the athlete understood the rehabilitation process which helped them to better cope with their current injury experience.

It is important to consider the effect of the age difference between the first and second injury as the athletes were arguably older and more mature with the second injury. Three participants noted this as well saying they felt like they “grew up” as a result of going through the adversity of their first injury, or that they had more life experience to rely on with the second injury. Better coping during the second injury experience may also be influenced by the familiarity of the signs and symptoms of the injury which helped the athletes to self-diagnose their re-injury. In turn, this may help the athletes to process the injury sooner, helping them to better cope as the injury diagnosis was not a shock to them.

In addition to being better able to cope with and manage their emotions, being familiar with the rehabilitation protocol helped the athletes to progress through their rehabilitation at a quicker pace and return-to-play with more confidence in their injured body part following the second injury. In the first injury experience, three athletes mentioned that anytime they would experience some level of discomfort or soreness, they would stop their rehabilitation, but with
the second injury they were better able to differentiate between normal injury related soreness and discomfort, and severe pain. As a result, the participants mentioned that they were not afraid of the pain and could push through the pain, helping them to progress and recover quicker.

Despite injuring the same body part multiple times, several athletes noted they were more confident in their ability to return to their sport because they knew they did it before and therefore were able to trust the rehabilitation. Even though the athletes were injured again, majority of the athletes did not state a poor or inadequate rehabilitation process as the reason they were hurt the second time. Thus, it seems that having the same exercises, while it can be boring and repetitive, the athletes did find it beneficial as they trusted the protocol, giving them more confidence that they can return to their sport stronger and healthy. This relates to the findings in Clement et al. (2015) in which the researchers noted common cognitive appraisals during the rehabilitation phase of injury pertained to perceptions regarding the value, effectiveness, level of difficulty, and pain levels of the rehabilitation process. Thus, it appears that having prior injury resulted in the athletes feeling more confident in the effectiveness and value of their rehabilitation.

While there may be several advantages to having prior injury experience and knowledge, the re-injury experience was still difficult for this sample of participants. Even though the athletes were better able to cope with their emotions, repeating the same injury and rehabilitation process for a second time was just as emotionally challenging as the first injury. This was demonstrated as the athletes having similar emotional responses during both injuries at all three phases of injury: onset, rehabilitation, return-to-play. Initially, the athletes had negative emotions of disappointment, frustration, shock, anger, and depression. During the return-to-play phase, athletes reported having mixed emotions as they were excited but also nervous. The emotions
experienced were also congruent to previous literature (e.g., Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Tracey, 2003). As the athletes progressed through their rehabilitation, their emotions improved, which is also consistent with previous literature (e.g., Langford et al., 2009; Madrigal & Gill, 2014).

As the integrated model suggests, there is a bi-directional cyclical relationship between emotional, psychological, and behavioral responses to sport injury (Wiese-Bjornstal et al., 1998). Thus, the negative emotions experienced during injury, such as frustration, anger, and sadness, may stem from the concerns athletes have when they sustain an injury. For this sample, the predominant concerns the athletes had were regarding the repetitiveness of sustaining the same injury, missing out on playing time and bonding time with their teammates, performance and fitness levels, loss of identity, long-term pain and consequences, and fear of sustaining another injury. These concerns were also present in previous research (e.g., Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Johnston & Carroll, 1998; Tracey, 2003); however, it appears these concerns may be exacerbated with a re-injury.

Regarding repetitiveness, seven athletes reported feeling frustrated that they were injured again. After their first injury, they felt like that injury was in the past and they could move on from worrying about their injury. Thus, athletes were frustrated with the repetitiveness from the cycle of being injured, healthy, and then injured again, prolonging the time they were physically unable to participate in their sport. This repetitiveness is related to having to miss time from their sport. With some injuries, like ACL injuries, requiring athletes to be out from their sport for a minimum of six months, this time away from sport is doubled with a re-injury. The re-injured skiers in Bianco et al. (1999) study also expressed similar concerns of having to miss practices and competitions for a second time. With being unable to practice for a prolonged period, this led
to concerns relating to performance and fitness standards. In addition, athletes were concerned with the long-term pain and complications they would have with the injured body part because of a repeat injury.

In regard to identity concerns, this relates to the loss of athletic identity, the need for social approval, and concerns with being labeled as the “weak link” or the “player that is always hurt”. For example, three participants acknowledged they were worried what others would think about their performance level as they have missed substantial practice time, or if others had doubts of the player staying healthy as they now have a history of repeating the same injury. This was also noted in Disanti et al. (2018) where the researchers identified athletes go through a period of role adjustment which was defined as the transition from “being a thriving physically active person to “the injured one” (p. 955).

In the limited studies that have explored re-injury and the influence of prior injury history, it does appear there is an irony of prior injury history being advantageous even though it is difficult to go through the same injury experience for a second time (Bianco et al., 1999; Carson & Polman, 2008; Tracey, 2003). Similar to this sample, the skiers in Bianco et al. (1999) were more equipped with practical information to better self-diagnose their injury, cope, and mentally prepare for the rehabilitation process. The first injury experience is often characterized by unknowns and uncertainty, thus the knowledge and experience gained from that first injury helps to lower the initial stress of sustaining an injury. However, conversely, the athlete just spent an extensive amount of time in rehabilitation to return to their sport and now may have to repeat the rehabilitation process again.

Another key finding was the importance of social support. This was another paradox presented in which the athletes were more self-reliant and independent during their second injury
rehabilitation due to their familiarity with the recovery process. Thus, the athletes were less likely to utilize their social support networks despite all the participants discussing the value and importance of a strong social support system. Previous research has shown social support to be beneficial in helping athletes cope with the psychological side of sport injury (e.g., Norlin et al., 2016; Yang et al., 2014) as it can help to buffer the stress experienced (Dolan & Brady, 2012). While re-injured athletes may need less support and guidance for the physical aspect of injury, it is still critical that sport personnel provide social support to re-injured athletes to help them cope with the emotional and psychosocial challenges of suffering a re-injury, which will be discussed in the practical implications section.

Athletes may be less dependent on athletic trainers as a result of being misdiagnosed initially. An interesting finding from this study is the prevalence of misdiagnoses as five of the eight participants were misdiagnosed by sport medicine professionals, such as athletic trainers or doctors, during their first injury experience. All three of the participants who had ACL re-injuries were misdiagnosed originally. Research has shown there is a high prevalence of misdiagnoses with ACL injuries. According to Frobell et al. (2007), the initial diagnosis based off the first clinical knee examination is confirmed by MRI results only 50% of the time, meaning half of ACL injuries are misdiagnosed originally. Being misdiagnosed was perceived as a lack of support as the information the athletes were given was false and led to a further delay in treatment, further prolonging the athletes return-to-play which was a substantial concern for the athletes.

It is important to note that the athletes who were dissatisfied with their athletic training and medical care were athletes that did not play at the NCAA DI level (i.e., played high school, club or NCAA DII). The NCAA DI athletes mentioned they had access to their trainer every day
which was perceived to be beneficial in their recovery. However, the athletes that had their first injury in high school or were non-DI athletes, they had limited access to physical therapy and athletic training resources. Thus, athletic trainer staffing concerns may be a barrier to providing the desired and necessary support to injured athletes. This is congruent with current literature which highlights the discrepancy in athletic trainers at different competitive levels. For example, Gallucci and Petersen (2017) found that NCAA DI schools had more athletic trainers on staff and greater resources (e.g., size and scope of facilities) than DII, DIII, and National Association of intercollegiate Athletics (NAIA) programs. Furthermore, Baugh et al. (2020) conducted a descriptive epidemiology study and discovered universities that had greater access to athletic trainers and medical staff, had lower injury and re-injury incidence rates. As athletic trainers are oftentimes a primary source of social support (e.g., Bone & Fry, 2006; Clement & Shannon, 2011; Robbins & Rosenfeld, 2001) and play a major role in the rehabilitation of an injury, it is important for injured athletes to have adequate access to athletic trainers to improve their physical rehabilitation and their overall recovery experience.

Another key finding in this study is the fear of re-re-injury. As fear of re-injury is a common emotion experienced after any injury in general, the researcher defined fear of re-re-injury as the concern of suffering a third injury after the second, re-injury experience. After the first injury, only four athletes reported having re-injury anxiety, but after the re-injury, all athletes reported having some level of fear of suffering another injury. Comparably, Houston et al. (2018) found that athletes with recurrent ankle injuries had higher levels of fear of re-injury as compared to the first injury experience, suggesting fear of re-injury intensifies with repeat injuries.
With the first injury, it seems athletes did not have a concern for re-injury as they perceived themselves to be invincible. They were aware of the re-injury statistics but had the false mindset of ‘those statistics won’t apply to me’, truly never expecting to endure a major injury again. Thus, the athletes experienced disbelief and shock when the second injury happened, realizing they were not invincible. As a result, it appears the athletes took the second injury rehabilitation more seriously and cautiously as the reality of not being invincible set in. This was demonstrated by the athletes being more honest during their rehabilitation, taking a slower approach, and being more proactive to avoid subsequent injury. Similarly, Casebolt (2018) in which the athlete who had three ACL injuries said she was ‘naïve’ after the first injury and was not concerned about the possibility of a re-injury. However, only after suffering that re-injury were the athletes more diligent and cautious with her approach to her rehabilitation.

Similar to findings of prior research, the athletes’ fear of re-injury presented as being hesitant especially in similar conditions in which the first injury happened (e.g., similar movements like jumping or cutting, wet turf fields; Carson & Polman, 2012; McVeigh & Pack, 2015; Podlog et al., 2011). All athletes reported the re-injury anxiety decreases with time as they become more confident in their injured body part, which was also supported in Gignac et al. (2015) in which fear of re-injury subsides with time. In addition, two athletes in this study alluded to a positive rehabilitation experience reducing re-injury concerns.

Considering fear of re-injury is the most commonly cited reason as to why athletes do not return to their sport following an injury (e.g., Baez et al., 2019; Lentz et al., 2015) and return-to-play statistics are lower following a re-injury compared to an index injury (e.g., Gans et al., 2018; Webster et al., 2019), one may assume an athletes motivation decreases as a result of sustaining the same injury for a second time and the subsequent fear of enduring another injury.
However, all athletes in this sample reported high levels of motivation to return to their sport and the athlete who had a career ending injury was greatly disappointed in being unable to return to their sport at the same level. The athletes’ stated their motivation stemmed from their love for their sport and their competitive nature.

The athletes in this sample seemed to have a renewed sense of motivation that also came from the perspective gained and lessons learned from going through this adversity. Even though the re-injury experience is unfortunate and a difficult time for the athletes, all the athletes in this study reported they were able to take a positive away from the experience and learn something about themselves. Some stated they were proud of themselves for overcoming adversity not once, but twice. Lessons learned was also a finding in Clement et al. (2015) in which the lessons learned helped the athletes to cope with their injury. Similarly, the athlete in Casebolt’s (2018) case study focused on maintaining a positive outlook on her situation by reprioritizing and reframing her challenges into focusing on the lessons to be learned and trusting that these obstacles were only going to make her a stronger athlete and person. Bianco et al. (1999) and Roy et al. (2015) also identified the importance of maintaining a positive outlook on having a successful and positive injury experience.

Overall, the re-injury experience is similar to a first injury experience in regard to similar emotional and psychological responses, and having the same rehabilitation protocol and exercises. This may help athletes to better cope with the injury as they are familiar with and more educated on the injury recovery process, knowing what to expect ahead of time. However, on the contrary, the repetitiveness of having to repeat the same process again and be sidelined from their sport again, can lead to more intense emotions and concerns, which may make it difficult to stay motivated during the rehabilitation and return-to-play phases of injury. Thus, social support
and adaptive coping strategies are essential in having a positive re-injury experience, which were extensively discussed by the athletes.

**Practical Implications**

This study provides several implications to improve the recovery experience for athletes who have suffered a re-injury by providing the desired social support. First, practical implications will be given for all sport personnel (i.e., anyone working with a re-injured athlete) in general, and then will more specific implications for athletic trainers, coaches, and sport psychology professionals.

Social support was a major theme discussed by all participants. Although athletes reported being better equipped to manage their emotions the second time, they still desired and appreciated the support they received from others. It seems the type of social support most desired was listening and emotional support, especially reassurance. Reassurance is important for re-injured athletes in reminding the athlete that the rehabilitation protocol is effective, and that they have successfully returned to play after the first injury and they can do it again. Furthermore, having people to check in on athletes daily and be accessible to athletes is recommended. In addition, it is important for sport personnel to provide support throughout the recovery experience, even after the athlete has returned-to-play, as two athletes reported they felt supported the first few days after the injury occurred, but then the social support decreased over time.

Another form of support that was highly valued was the use of performance and process goals rather than outcome goals. Outcome goals relate to the result of a performance, performance goals focus on improving performance relative to one’s own previous performance,
and process goals specify specific behaviors and actions one will take during a performance (Burton, 1989; Martens, 1987). In the context of sport injury, an outcome goal relates to the long-term goal of the athlete receiving the medical clearance to return-to-play. As some injury recoveries are lengthy and athletes can easily be defeated by the slow progression, these may not be the most beneficial goals for athletes (Evans et al., 2000). Performance and process goals are short-term, or daily goals that can help athletes maintain their motivation throughout the rehabilitation process (Evans et al., 2000). Examples of these types of goals in a sport injury context are increasing range of motion by a certain number of degrees each week, being able to squat five more pounds than the previous day, or increasing the distance one was able to run. All sport personnel can help athletes to create performance and process goals and hold them accountable to these goals, to ultimately enhance rehabilitation adherence and motivation, as athletes may have lower intrinsic motivation with a re-injury.

For athletic trainers specifically, while a re-injured athlete may need less informational support in regard to the rehabilitation protocol, it seems that, from the athletes’ perspective, ATs need to be more informed on accurate diagnoses and chronic overuse injuries. In regard to diagnoses, athletic trainers may want to seek out a second opinion before giving out their impression to avoid giving athletes false hope, or ordering an MRI if the initial examination is inconclusive. Based on the first injury experience for the athletes with ACL injuries, an MRI was not ordered until after the athlete tried to return playing and they were still having issues with their knee. However, with the second injury, it seems the athlete’s prior injury history was taken into consideration and an MRI was ordered much earlier. In addition, as the athletes had a concern with fitness levels and are more able to independently rehabilitate their injury from their previous experience, perhaps ATs can help athletes find alternative methods to maintain their
physical fitness without further injuring their body part. This would help to alleviate their concern with pre-injury fitness levels upon returning to play.

Based on the findings from this study, one recommendation for coaches is to ask for the athlete’s preference regarding attending practices. The participants appeared to have varied feelings regarding attending practices as they appreciated still feeling involved and connected with the team, however, it was emotionally difficult to watch their teammates play from the sidelines. Some athletes may prefer to not attend practices due to it being a reminder of what they are missing out on with their injury. Some may want to still attend practice but are bored and feel alienated just watching, so would prefer to stay involved by either cross training or assisting the team in some manner. By coaches giving athletes the option to choose how much or how little they stay involved with the team, may help the athletes to better cope with their injury as they have more autonomy. In addition, athletes appreciated when coaches let them return to play at their own pace (i.e., do not rush the athletes to return-to-play before they are physically and psychologically ready).

As for sport psychology professionals or mental skills consultants, providing social support to re-injured athletes is crucial. In addition, validating the athlete on their experiences is important. Several athletes felt they were not heard by their physical therapist or athletic trainers, so ensuring the provision of listening and emotional support is going to be crucial for anyone working with an injured athlete. Majority of the athletes found coping strategies of focusing on the positives and the bigger picture was important. Thus, sport psychology consultants can help foster a growth mindset and reconnect the athlete with their values. In addition, interventions such as healing imagery, written disclosure, relaxation techniques, acceptance and commitment therapy, and goal setting have been found to be effective interventions in helping athletes to cope
with the psychological consequences of injury and improve psychological readiness to return to
their sport (Reese et al, 2012).

**Limitations**

To date, there has been a lack of research on the psychological and emotional responses
to a re-injury. Therefore, this study is an exploratory study to increase the understanding of the
lived experiences of college athletes that have suffered a re-injury. However, this study is not
without limitations. One limitation is recall bias as this was a retrospective study and the
participants had to recall their experiences from several years ago (Kopeck & Esdaile, 1990).
The inclusion criteria for this study were that the first injury was within the last five years and
the second injury was within the past three years; therefore, the participants may have had
difficulty remembering their injury experience(s) if they were sustained several years ago. A
second limitation is the lack of diversity within the sample as majority of the participants were
White \((n= 6)\) and female \((n= 6)\). As there may be cultural and gender differences in the
responses, certain psychological and emotional responses to re-injury may have been missed as a
result of the lack of diversity amongst the participants.

**Future Research**

As this study was an exploratory study, it is imperative further research continues to
explore the psychological and emotional responses to a re-injury. As previous research has
demonstrated, athletes are less likely to return to sport following a re-injury. All but one athlete
who had a career ending injury, had returned to their sport, or is planning on returning to their
sport. It is important to note that the primary recruitment method was emailing athletes who are
actively playing on a team. Thus, future research can extend this study by recruiting athletes who
decided not to return to their sport after a re-injury to gain an understanding of the physical, psychological, emotional, and social challenges that led to that decision.

Similarly, as research supports that re-injuries are common in younger populations (Shelbourne et al., 2009; Webster & Feller, 2016), this study can be conducted with youth athletes to determine if a difference exists between youth and college athletes. As this study identified, there may be a difference in experiences based on the rehabilitation environment, meaning if an athlete worked with a physical therapist or had access to an athletic trainer daily, which is more common in college athletics. Thus, exploring youth athletes’ experiences where they do not have access to a trainer every day may be important in understanding how access to care and social support influences the recovery experience of a re-injury.

To continue the exploration of social support for re-injured athletes, another avenue for future research is to recruit international athletes. Due to the distance from their home country and the time differences, international athletes may have less to access to family provided social support, and thus, the support needed from coaches, athletic trainers, and teammates may be even more critical. In addition, as lack of diversity was a limitation in the present study, recruiting international athletes would help to understand cultural differences in regard to the psychological and emotional response to a re-injury.

Another research direction is to explore the role of sport medicine professionals in re-injury. As this study found, athletes with a re-injury are more familiar and educated on the injury process; therefore, they can be more independent with their rehabilitation. However, it is still important to provide support for athletes as re-injury is still an emotionally difficult time for athletes. Therefore, further research can better investigate athletes’ perceptions of sports medicine professionals and their role in the re-injury experience, or also interview sport medicine
professionals to explore both their experiences with working with re-injured athletes and their perceptions of how their role may be different when working with an athlete that has never had an injury before and one that has had a re-injury.

As one limitation was recall bias, a prospective study design that follows athletes throughout their second injury experience to gain a better understand of the day-to-day lived experiences could be beneficial. In addition, further studies should strive for a larger sample size to be more representative of types of injuries, sports, and/or level of sport participation.

**Conclusion**

In conclusion, suffering a re-injury appears to be a nuisance as the athlete has to repeat the same painful rehabilitation again, experience the same emotional hardships, and miss even more time from their sport. However, athletes appear to be better able to cope with the re-injury as they have been through it before and can apply their prior experience and knowledge gained to progress through the rehabilitation quicker and more confidently. Social support is important to help athletes stay motivated and confident in their body part as they now have a history of the same injury happening multiple times and are more fearful of a third injury happening again. Overall, the findings from this study can be applied by athletes, coaches, athletic trainers, sport psychology professionals to improve the re-injury experience for athletes.
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APPENDIX A

AN INTEGRATED MODEL OF RESPONSE TO SPORT INJURY (Wiese-Bjornstal et al., 1998)

APPENDIX B

FEAR-AVOIDANCE MODEL (Lethem et al., 1983)

Fear-Avoidance Model of exaggerated pain perception—1

Fig. 2. Fear-Avoidance Model of exaggerated pain perception.
APPENDIX C

COGNITIVE-BEHAVIORAL MODEL OF FEAR OF MOVEMENT/(RE)-INJURY

(Vlaeyen et al., 1995a)

Fig. 2. Cognitive-behavioral model of fear of movement/(re)injury.
APPENDIX D
REVIEW OF LITERATURE

Introduction

As injury is an inevitable risk to sport participation, there is an abundance of existing literature that has investigated the psychological response to sport injury. Two salient emotions experienced by athletes are fear and anxiety, specifically fear and anxiety of suffering a re-injury after returning to sport (Ardern et al., 2014; Burland et al., 2018; Hsu et al., 2017; Lentz et al., 2015; Podlog et al., 2011). Several studies have identified a history of injury and fear of re-injury as risk factors to suffering a second injury (An et al., 2019; Andersen & Williams, 1988; Paterno et al., 2018; Podlog et al., 2011; Tagesson & Kvist, 2016). Recent literature has explored rehabilitation and return-to-play outcomes for re-injuries, finding that the return-to-play rates are significantly lower with re-injuries as compared to a primary injury (Anand et al., 2016; Gans et al., 2018; Grassi et al., 2015; Liu et al., 2016; Webster et al., 2019). The literature regarding re-injuries is limited to investigating the risk factors for a re-injury, the incidence rates of a re-injury, and analyzing return-to-play rates for re-injuries. Studies exploring the psychological response to sustaining a re-injury are scarce. Therefore, the current study aims to fill in this gap by studying the lived experiences of athletes who have suffered a re-injury. The following review of literature will highlight the prevalence of injury; explore the various psychological and emotional responses to injury; outline several injury models; highlight the implications fear of re-injury has on the rehabilitation process, return-to-play outcomes, and suffering a re-injury; and summarize the existing literature on re-injuries in regard to incidence rates and return-to-play outcomes.

Epidemiology of Sport Injury in College Athletics
Athletic injury is an inevitable risk to sport participation. It has been argued that “injury is just part of the game” (Chalmers, 2002, p. iv22). As a method to collect injury and exposure data, the National Collegiate Athletic Association (NCAA) developed the Injury Surveillance System (1998-2009), currently known as the Injury Surveillance Program (ISP, 2009-present), where a representative sample of NCAA institutions report injury data from a variety of sports (NCAA, 2019). The ISP defines an injury by the following criteria: (1) occurred as a result of participation in organized intercollegiate practice or contest, (2) required medical attention by team certified athletic trainer or physician, and (3) resulted in restriction of participation or performance for one or more days beyond the day of the injury (NCAA, 2019).

According to the ISP, there were 182,000 injuries between the academic years of 1998 and 2004, and over one million injuries between the years of 2009 and 2014 (NCAA, 2019). Injury rates are often reported in terms of athlete-exposures (A-Es), which is defined as “1 athlete participating in 1 practice or game” (Hootman et al., 2007, p. 311). Kerr et al. (2015) used this method in a descriptive epidemiological study that summarized the injury rates from the 2009-2010 to the 2013-2014 academic years using data obtained from the NCAA ISP. From the participating schools and sports (n=25), there were 1,053,370 injuries out of 176 million A-Es in the five school years which translates to an incidence rate of six injuries per 1,000 A-Es. When considering differences between women’s and men’s sports, men’s sports had a higher incidence rate of 6.5 injuries per 1,000 A-Es, as compared to 5.2 injuries in women's sports. In regard to the different sports and gender, football and wrestling had the highest injury rates for men's sports, and gymnastics and soccer had the highest in women’s sports. While the majority (63.8%) of injuries occurred during practices, injuries sustained during a game resulted in greater time away from their sport which is an indication of more severe injuries. The most common
injuries were sprains (including ACL tears) and strains, followed by fractures, stress fractures, dislocations, subluxations, and concussions.

In a similar study design, Kay et al. (2017) summarized the epidemiology of severe injuries (i.e., injuries that restricted sport participation for at least 21 days) sustained by NCAA athletes during the academic years of 2009-2010 to 2014-2015. During this six-year timeframe, 3,183 severe injuries were reported which is equivalent to an incidence rate of 0.66 injuries per 1,000 A-Es. Compared to minor and moderate injuries, severe injuries accounted for 9.5% of all injuries. The sports with the highest frequency of severe injuries were men’s football, men’s ice hockey, and women’s soccer. The most common body parts injured were the knee, lower leg/ankle/foot, and head/face/neck. In terms of actual diagnoses, sprains, strains, and fractures were the most common severe injuries.

Similar to Kay et al. (2017) Dane et al. (2004) also supports that lower body injuries are more common than upper body and extremity injuries. Dane and colleagues evaluated the relationship between sex, sport, and injured body regions during a single sport season at a University in Turkey. The researchers provided percentages of injuries for eight different body regions (head/neck, shoulder, elbow/forearm, hand/wrist/fingers, chest, spine, knee, and foot/ankle) for the five different sports. Lower body injuries (i.e., knee, foot, ankle injuries) accounted for 44.6%, 32.9%, 57.7%, 41.6%, and 57.5% of sport injuries in soccer, basketball, volleyball, running, and wrestling, respectively. Considering lower body injuries accounted for only 25% of the body regions evaluated, these statistics substantiate that lower body injuries are more common. Therefore, the researcher is primarily interested in lower-body injuries as they are more common and may be more susceptible to re-injuries.
According to Dick et al. (2007), injury prevalence rates are likely to be underestimated because the ISP does not consider injuries sustained during club sport activities or outside of organized practices or contests, and the ISP is a voluntary recording program, meaning it is possible that not all injuries are reported (Dick et al., 2007). Thus, the incidence of injury is likely to be greater than what is reported. These epidemiological studies were used in this study to support that injury is a common experience in athletics and that many athletes will experience at least one injury sometime during their collegiate athletic career.

**Physical Rehabilitation Process**

Kraemer et al. (2009) provides a brief overview of the physical rehabilitation process athletes have to undergo when they suffer an injury. A variety of sport medicine professionals are often involved in the injury process including “physicians, athletic trainers, physical therapists, and strength and conditioning specialists” (p. 392). The researchers conceptualize the rehabilitation process into five phases: medical treatment, rehabilitation, end-stage rehabilitation, generic-specific development, and sport-specific development. The medical treatment phase is broken down into two sub-phases. In the first sub-phase, physicians examine, diagnose, and if necessary, perform a surgical repair. The second sub-phase of the medical treatment is characterized by physicians, physical therapists, and athletic trainers managing pain, limiting swelling, and protecting the injured tissues. Next, the rehabilitation phase is distinguished by athletic trainers and physical therapists helping the injured athlete to restore motion and neuromuscular control. The end-stage rehabilitation phase is when athletic trainers, physical therapists, and strength and conditioning specialists work with the athlete to restore balance, reflex control, strength, and endurance. The generic-specific development phase is differentiated by athletes working with strength and conditioning specialists to restore basic physical
performance functions. The last phase, sports-specific development is when the athlete resumes competitive-specific performance functions (i.e., returning to practices and competition without restriction).

While this phase-like approach portrays injury as a linear process, Kraemer et al. (2009) argue “rehabilitation is often a haphazard process with positives and negatives occurring daily” (p. 392). Thus, it is important to be familiar with the physical rehabilitation process because within each phase, there are numerous challenges and setbacks that injured athletes may experience, which may lead to a variety of psychological and emotional responses that can influence the injury rehabilitation experience and outcome. In the current study, the researcher organized the interview questions into the various phases of the injury rehabilitation process in aims of gaining a deeper understanding of the psychological and emotions responses that are experienced in each distinct phase.

**Injury Models**

*Response to Injury Models*

With a high injury prevalence rate in sport, there is a need to improve both the physical and psychological aspect of injury (Fernandes, 2014; Kraemer et al., 2009). Several theoretical models have been developed to better understand and conceptualize the psychological and emotional responses to sport injury. The following models will be discussed: the grief-response model (Kubler-Ross, 1969), the cognitive appraisal model of psychological adjustment from athletic injury model (Brewer, 1994), and the integrated model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998).

*Grief-Response Model.* The grief-response model is a stage model proposed by Kubler-Ross in her book *On Death and Dying* (1969). It was originally developed to presume a succession of
emotions (denial, anger, bargaining, depression, and acceptance) experienced by people who are either grieving the death of a loved one or by people who are terminally ill and are coping with dying (Kubler-Ross, 1969). This model has been applied to sport injury with the assumption injured athletes experience a similar loss, such as loss of athletic identity and the ability to physically participate in sport. Brewer et al. (1993) defined athletic identity as “the degree to which an individual defines oneself in the role of an athlete” (p. 237). Therefore, when injured athletes are forced to not participate in their sport due to their injury, they lose a sense of self. This loss implies injured athletes advance through the five stages of grief (Evans & Hardy, 1995; McDonald & Hardy, 1990). However, the research supporting this grief-response model in sport is varied.

One study that has demonstrated support for grief and stage models is by McDonald and Hardy (1990). In this study, the researchers investigated the affective responses of severely injured NCAA DI athletes over a four-week time point from the onset of the injury. They concluded the injury experience is an emotional period and there is a linear progression from negative to more positive emotions as the rehabilitation advanced. This study supports the Kubler-Ross (1969) stage model as the athletes proceeded through the five stages, beginning with more negative emotions of denial and anger, and ending with a more positive affect of acceptance.

Conversely, empirical evidence supporting this stage model in the sport setting is limited and several researchers have criticized the applicability of this model to sport injury. For example, some argue this model does not account for individual differences or that the grief response may not be linear (Brewer, 1994; Evans & Hardy, 1995). In a qualitative study analyzing the psychological reactions to season ending injuries, Udry et al. (1997) applied the
Kubler-Ross (1969) model to their participants' responses. The results indicate partial support for the model, specifically the anger, depression, and acceptance stages. It seems there is support for grief as a common reaction amongst injured athletes; however, the grief response model does not account for the dynamic individual nature of sport injury and the vast array of differing responses that can occur.

**Cognitive Appraisal Models.** In consideration of the individual differences in the response to sport injury, cognitive appraisal models were developed to demonstrate how two people can experience the same injury but have different reactions to the injury, or that one person can experience two different injuries in a completely different manner. A cognitive appraisal refers to how an athlete interprets and perceives their injury (Brewer, 1994). According to Lazarus (1991) there are two types of appraisals. A primary appraisal is regarding “how the encounter is relevant to the person’s well-being” and a secondary appraisal is concerned with “the person’s resources and options for coping with the encounter” (p. 618). For example, an injured athlete may perceive their injury as a threat to keeping their starting position and that they do not have the support from their head coach (lacking coping resources). Their response to an injury would be more negative compared to someone who views their injury as an opportunity to take a break away from sport and reinvest their energy on their academics.

Brewer (1994) proposed the cognitive appraisal model of psychological adjustment from athletic injury. This model suggests that personality factors (e.g., trait anxiety, self-esteem, self-motivation, coping skills, injury history, investment in sport) and situational factors (e.g., recovery progress, social support, duration of injury, severity of injury, life stress) influences athletes’ cognitive appraisals which subsequently impact their emotional response to their injury (e.g., anger, frustration, depression). This emotional response then affects the athlete’s
behavioral responses such as adhering to the rehabilitation protocol or seeking social support (Brewer, 1994).

In a preliminary investigation of the applicability of cognitive appraisal models to sport injury, Daly et al. (1995) tested this model with 31 recreational and competitive athletes (19 males, 12 females, $M = 26.06$, $SD = 11.42$) following knee surgery. These researchers analyzed the correlation between cognitive appraisal, mood disturbance, and rehabilitation attendance and adherence (behavioral responses). The results support the cognitive appraisal model as cognitive appraisals were significantly correlated with emotional disturbance, which in turn was associated with the behavior of attending physical therapy sessions (Daly et al., 1995).

Wiese-Bjornstal et al. (1998) expanded Brewer’s (1994) model developing the integrated model of psychological response to the sport injury and rehabilitation process. This model reinforces that both personal and situational factors influence the cognitive appraisal of injury. However, this proposed integrated model differs from Brewer’s model by considering pre-injury factors such as personality, history of stressors, coping resources, and interventions. Another difference is the development of the dynamic core. Brewer’s (1994) model indicated a linear progression of cognitive appraisals influencing the emotional response and the emotional response influencing the behavioral response, whereas the dynamic core suggests there is a bi-directional and cyclical relationship between cognitive appraisals, emotional responses, and behavioral responses. These three facets then influence the recovery outcome of the injury, in terms of both physical and psychological outcomes. Examples of physical recovery outcomes are being medically cleared to resume sport participation and returning to pre-injury performance levels. An example of a psychological recovery outcome is being psychologically ready to resume sport participation, regardless of receiving medical clearance.
To investigate the parallel between cognitive appraisals and emotional response, Albinson and Petrie (2003) used the integrated model to study the psychological adjustment to sport injury in college football athletes ($n = 84$). This study employed a prospective, repeated measures design in which the athletes completed several questionnaires throughout their injury rehabilitation (days one, seven, 14, and 28 post injury, and every two weeks if not returned by day 28). The researchers found there was a positive relationship between cognitive appraisals and emotional response, meaning athletes who perceived their injury as more stressful and had coping difficulties experienced a greater mood disturbance. Thus, the researchers concluded there is evidence of a positive relationship between appraisals and an athlete’s emotional disturbance as proposed in Wiese-Bjornstal et al.’s (1998) model.

In addition, several studies have investigated if personal and situational factors mediate the appraisal and reaction to sport injury as proposed in the integrated model. For example, in a previously discussed study, Bianco et al. (1999) interviewed injured members of the Canadian National ski team to gain an understanding of the psychological aspects of sport injury. They confirmed several personal mediators such as acceptance of injury risk, knowledge of injury or illness type, experience with injury or illness type, and situational mediator variables such as injury or illness severity, type of injury, status on team, time in season, as influencing the cognitive and emotional response to injury. For example, skiers with previous injury (personal mediator) were already familiar with the injury and rehabilitation protocol, which on one hand, reduced some of the stress in terms of not knowing what to expect with the injury rehabilitation. Similarly, Roy et al. (2015) conducted a case study in which they conducted an inquiry into the cognitive appraisals and lived experiences of an injured cyclist using a personal and situational backdrop. The researchers concluded that the athlete’s cognitive appraisals were influenced by
their childhood experiences as well as situational factors like their relationship with teammates and family members.

Thus, the integrated model allows for a more holistic approach to the study of the psychology of sport injury as it takes into account a wide range of factors that influence the psychological and emotional response to sport injury, and considers the dynamic relationship between cognitive appraisals, emotional responses, and behavioral responses on the recovery outcomes. Wiese-Bjornstal et al.’s (1998) model is the most commonly accepted and utilized model when examining the psychological response to injury. Therefore, this model was used in the presented study, specifically in regard to creating the interview guide as this model allows for the relationship between appraisals, emotions, and behaviors to be assessed.

Antecedents to Injury Models

There are an abundance of physical and psychological risk factors that predispose an athlete to injury. In this section, the model of stress and injury, proposed by Andersen and Williams in 1988 and revised in 1998, will be discussed to explain the psychological antecedents of an injury.

Model of Stress and Injury. The model of stress and injury (Andersen & Williams, 1988; Williams & Andersen, 1998) presumes an athlete’s personality (e.g., competitive trait anxiety, locus of control, hardiness), stress history (e.g., prior injury, major life events, daily hassles), and coping resources (e.g., mental skills, coping behavior, self-care, social support) influence an athlete’s stress response during a perceived stressful athletic situation, which in turn can enhance the risk of sustaining an injury. Therefore, individuals with certain personality traits, who have a higher stress history, and have poor coping strategies and resources are more likely to appraise a
situation as stressful which can lead to physiological and attentional changes that may predispose the individual to an injury.

In regard to research support for this model, Appaneal and Habif (2013) reviewed studies that investigated the relationship between personality, stress history, coping resources, and injury. In regard to personality traits, Appaneal and Habif reviewed 45 studies and found that 69% of the studies concluded there is a significant relationship between injury and personality traits such as anger, depression, anxiety, social desirability, athletic identity, competitiveness, and narcissism. Appaneal and Habif reviewed 65 studies that investigated the relationship between stressful events and injury. They found that 80% of the studies reported a relationship between stress history (e.g., life events, daily hassles, and prior injury history) and injury incidence. Lastly, Appaneal and Habif analyzed 31 studies that reviewed the relationship between coping resources and injury and approximately 60% of these studies found a significant relationship. Specifically, the coping resources that were investigated included social support, mental skills, and self-care. Overall, this model is important in relation to the current study because it suggests injury history and the stress of an injury can predispose an individual to a subsequent injury. Thus, if an athlete is stressed about enduring a re-injury, this psychological and emotional response is considered a risk factor to a second injury. Therefore, it is imperative to study re-injury and to consider the relationship between injury history, fear of re-injury, re-injury rates, and re-injury experiences. This relationship will be explored in greater detail in a later section.

**Psychological and Emotional Response to Sport Injury**

During the injury rehabilitation process, the focus is often on the physical rehabilitation process that is outlined above. However, when an athlete sustains an injury, they often go
through a fluctuation of emotions and psychological concerns that may be neglected or undervalued by sport personnel (Ivarsson et al., 2017). The following section explores these diverse emotions and psychological challenges athletes face throughout their injury experience.

Johnston and Carroll (1998) qualitatively examined the emotional and psychological responses of 16 injured athletes (11 males and five females; $M = 22.8, SD = 10.3$). In an unstructured interview, the researchers asked the athletes to describe their experiences and emotions from the onset of the injury to the time point of the interview, regardless if they had returned to sport or not. Results indicated that shock, anxiety, and disbelief were common emotions immediately following the onset of the injury. Once the athletes had contact with medical personnel and received more information on their injury and diagnosis, athletes reappraised the injury severity and considered treatment options. The emotional responses varied depending on the severity of the injury and if the athlete's original appraisal was more or less severe than the actual diagnosis.

The early stages of rehabilitation were distinguished by psychological concerns such as a lack of mobility and the disruption in their normal daily and sport activities. This led to feelings of frustration and depression. As the injured athletes attended practices but were sidelined, unable to practice, this was a further reminder of their injury and that the injury could negatively impact their career goals. This led to emotions of jealousy, regret, anger, depression, and frustration. For example, one athlete mentioned “I’d go to training and just be on the side lines and everyone’s there thinking, oh there’s [athletes name], he’s injured. Everyone knows what you’ve done. No one gives a stuff really. They’d come over and ask how you’re getting on, but they are not really interested because they’re still playing” (p. 214). Isolation and loneliness are commonly experienced by athletes as they are alienated from their sport and their team (Ermler
& Thomas, 1990). As rehabilitation progressed, athletes who evaluated their rehabilitation as successful had more positive emotions such as relief, optimism, and happiness, while on the contrary, those individuals who negatively perceived their rehabilitation had feelings of frustration, apathy, and depression, resulting in poor rehabilitation adherence. Towards the end of rehabilitation, athletes were eager to return to their respective sport, some even risking a premature return-to-play. When athletes were cleared to participate in sport again, athletes had lower self-confidence which the researchers attributed to fear of re-injury (Johnston & Carroll, 1998).

This study was important to the current study because it highlights the importance of understanding how an athlete appraises their injury. A cognitive appraisal refers to how an athlete interprets and perceives their injury, which influences their emotional reaction to the injury (Brewer, 1994). As Johnston and Carroll (1998) outline, the emotional responses of the athletes depended on the athlete’s assessment of the severity of the injury and the perceived consequences of the injury. Furthermore, this study describes the diverse array of emotions experienced by injured athletes, such as shock, disbelief, anger, frustration, relief, and happiness. Thus, the researcher assessed the cognitive appraisals and emotional responses of the participants within their situational contexts.

Bianco et al. (1999) also investigated the psychosocial challenges associated with injury and illness in 12 elite Canadian skiers (nine males, three females; ages 19-45 years). The researchers analyzed the challenges encountered in five different phases: injury-illness phase, deciding to receive treatment phase, rehabilitation-recovery phase, deciding to return to full activity, and return to full activity phase. The injury-illness phase extended from the onset of the injury to the athlete’s decision to receive treatment from a doctor or athletic trainer. The second
phase was a transition point in which athletes received a diagnosis for their injury and then had to decide if they were going to discontinue their sport participation to receive treatment or continue sport activities despite their injury. The rehabilitation-recovery phase included the treatment and the physical healing of the injury until the athletes were medically released to resume sport activities, lasting one to 24 months for the participants. The fourth phase was characterized by the athletes deciding to return to their sport. This decision was influenced by their medical clearance, their psychological readiness to return, significance of upcoming competitions, and pressure from their team. Lastly, the return-to-full activity phase was distinguished by the return to sport-specific training and competition (Bianco et al., 1999).

In the injury-illness phase, the athlete’s psychological responses were categorized into concerns about their ski career, concerns about their future, thoughts about quitting the sport, and acceptance of the injury. These initial worries were then expressed as feelings of shock, depression, confusion, frustration, and disappointment (Bianco et al., 1999). Several athletes mentioned they were always aware of the risk of injury, but still shocked they sustained an injury. For example, one athlete stated “I trained very hard for 3 years and the year I could qualify for the Olympics, I fell ill. It was a huge shock. I wanted to quit. It was morally and psychologically very difficult” (p.162). The decision to receive medical treatment was mediated by the severity of the injury, the athlete’s status on the team (e.g., starter versus non-starter), and the time of injury relative to their season. The third phase, rehabilitation-recovery, was physically characterized by fatigue, pain, and discomfort that was experienced during the rehabilitation program. Emotionally the participants were stressed, bored, and frustrated with their physical limitations and restrictions. The sources of their stress were also related to the repercussions of a prolonged absence from skiing and having difficulties maintaining motivation.
during their rehabilitation. In regard to maintaining motivation, one athlete commented “you’re there and you’re psyched, but you just go flat so fast. You’re doing little things that you can’t see any benefit from. It’s really discouraging. It’s really hard to do a quality job and stay focused every day” (p. 164). Once participants decided to return to skiing, the physical demands of returning after being off for an extended period was challenging. Other stressors were the athlete’s concerns about re-injury, lack of strength, and low confidence. One athlete described this as “you cannot lose confidence in that 1-year period that you have to give yourself post-injury. It’s a really frustrating time, because physically you feel 100%, but your body is just not responding. You have to go through the competitive season without getting frustrated, without losing confidence and wanting to quit” (p. 165).

Similar to Johnston and Carroll (1998), the findings of Bianco et al. (1999) emphasize the psychological worries and emotions associated with an injury. Specifically, the psychological concerns and emotions the athletes experienced resulted from the length of time the athletes were sidelined from their sport. For example, the participants were worried about the implications of missing practices and competitions on their long-term ski career which led to feelings of frustration and disappointment. In regard to the current study, these psychological concerns and emotions may be heightened with a re-injury due to the extended time out of their sport when suffering a re-injury. In addition, the researchers noted the athlete’s appraisals to the injury was influenced by the athletes’ knowledge and experience with the particular injury. Thus, this related to the current study as it indicates having a re-injury may be helpful in coping with the injury as the athlete has already engaged in the rehabilitation process and knows what to expect.

In a qualitative study with 10 college athletes \( M = 21.1, \; SD = .91 \), Tracey (2003) was interested in the relationship between cognitions and emotions in injured NCAA DIII athletes
with moderate to severe injuries (out of practice and competition for at least seven consecutive days). Tracey interviewed participants at three time points: 24 to 72 hours post injury, one-week post-injury, and three weeks post-injury.

In the first few days post injury, the athletes psychological responses related to the uncertainty surrounding their injury (e.g., the diagnosis, when they could return to their sport, would they be able to return to pre-injury performance level), fear of vulnerability, and frustration with loss of independence. In terms of their internal thoughts, the injured athletes were concerned with the loss of training as a result of their injury and its implications for the rest of the season. This led to predominantly negative emotions such as feeling depressed, frustrated, confused, worried, down, anxious, and having low self-esteem. Regardless of the higher prevalence of negative emotions, the athletes reported being determined to stay positive throughout the rehabilitation process to have a successful recovery (Tracey, 2003).

At the second time point, the visual aspect of the injury (i.e., bruising, swelling, using crutches, braces, slings) influenced the emotional process. The athletes were fearful as the reality of their injury set in. They feared missing practice, losing fitness, and the length of not being able to practice and compete (Tracey, 2003). Another obstacle the injured athletes faced during this time point was deciding to attend practices or not. For some participants, their coach mandated their attendance at practice, and for others it was their choice. For those that attended practice, being present was a reminder that their injury resulted in losing fitness and practice time, and athletes felt that they were letting their team down. Regardless of having difficulty with being present at practices, the injured athletes still socialized with their teammates and found their support to be helpful. The frustration athletes alluded to in the first interview was still prevalent;
however, their energy shifted to their academics as the athletes began to perceive their injury as “good timing” in which they could focus on their academics (Tracey, 2003, p. 284).

By three weeks post-injury, some participants had returned to play \((n = 4)\) and others had not \((n = 6)\). For those that did, their mood state had improved and expressed feelings of confidence and relief. The athletes with more serious injuries, who had not returned yet, reported they were still frustrated, disappointed, and discouraged but were trying to maintain a positive outlook. As rehabilitation progressed and slight physical improvements were made, the athletes were more optimistic and gained confidence. Furthermore, many participants tried to analyze the cause of their injury and asked a lot of “what-if” questions. This led to self-doubt and anger. Anxiety was also high when the participants would compare themselves to others in terms of fitness level and lack of training. The injured athletes feared losing their spot on the team or losing playing time due to them being labeled as “damaged goods” by their coach (Tracey, 2003, p. 287).

In summary, Tracey (2003) is a significant study as it gives prominence to the relationship between the psychological and emotional response to injuries. When an athlete endures an injury, there are often concerns about the implications of missing time away from their sport in regard to their status on the team and the long-term consequences of the injury. In turn, this leads to commonly experienced emotions of disbelief, frustration, anger, worry, and fear, which can influence the motivation and rehabilitation adherence of athletes. This study can was used in the development of this study and the interview questions in regard to better understanding these psychological challenges and emotions experienced during an injury, which may be exacerbated by a re-injury due to having to repeat the rehabilitation process for a second time and miss even more time away from their sport. Ultimately, the current study assessed how
an athlete's appraisal(s) of a re-injury influences their psychological, emotional, and behavioral response to a re-injury.

Using a mixed methodology case study approach, Carson and Polman (2008) investigated the emotional reactions and cognitive appraisals of a professional rugby union player who was rehabilitating from an ACL injury. Their mixed methods approach was qualitative dominant in which they used semi-structured interviews and diary entries to assess the athlete’s thoughts and feelings. Quantitatively, the athlete completed the Emotional Response of Athletes to Injury Questionnaire (ERAIQ; Smith et al., 1990), Sports Inventory for Pain questionnaire (SIP; Meyers et al., 2003), the Coping with Health, Injuries, and Problems inventory (CHIP; Endler, & Parker, 2000), and the Medical Outcomes Study - Social Support Survey (MOS-SSS; Sherbourne & Stewart, 1991). Carson and Polman investigated the injury experience in six phases: initial injury, pre surgery, post-surgery, early limited participation, late limited participation, and return-to-play.

In the initial injury phase, the researchers identified shock, disbelief, helplessness, depression, frustration, anger, and apprehension as common emotions experienced during the initial phase prior to the athlete’s surgery (Carson & Polman, 2008). For instance, the injured athlete was shocked and disbelieved at the severity and length of time away from his sport. This was elaborated in his quote “I initially thought about my career and worried it was over. Then I was gutted at missing playing time and knowing how much time I’d miss” (p.76). The athlete also had psychological concerns about the upcoming surgery, the injuries implications on their career, and missing playing time. The pre-surgery phase was distinguished by emotions of apprehension, anger, depression, and frustration. The athlete was nervous prior to the surgery and had ineffective thoughts relating to the worst-case scenario and not being able to compete
again. Behaviorally, this athlete used problem focused coping strategies of learning about the surgical procedures and the recovery process, seeking social support and using mental skills like positive self-talk and imagery. The post-surgery phase was characterized by emotions such as relief and anxiousness. Relief was related to a successful surgery and the optimism stemming from focusing on rehabilitation and being able to progress towards being able to compete again. However, the athlete was anxious about the rehabilitation and the physical demands of it. Coping strategies included information gathering on the recovery process and transferring time and energy away from the sport and to spending time with family and starting a new hobby. During the early stages of return to sport, the athlete was encouraged as he gradually progressed and improved over time. However, the athlete began to have fears about not fully recovering and was frustrated by lack of mobility and strength. Behavioral responses included goal setting and staying occupied with other hobbies. In the return-to-play phase, the athlete was excited and relieved to be competing again, but on the other side was nervous about his fitness, his performance meeting expectations, and had a slight fear of re-injury. In terms of his behavioral responses during this phase, the athlete disclosed he used goal setting, communicated regularly with the medical staff and coach, and focused on his performance (Carson & Polman, 2008).

Clement et al. (2015) interviewed eight NCAA DII injured athletes (4 females, 4 males; aged 18-22 years) at three time points using Kamphoff et al. (2013) proposed phase-like approach to studying sport injury: reaction to injury, reaction to rehabilitation, and reaction to return-to-sport. In the reaction to injury phase, injured athletes will initially appraise the severity and consequences of the perceived injury, with more severe injuries eliciting more negative responses and emotions. The second phase is characterized by athletes engaging in rehabilitation exercises to improve strength, mobility, and balance. Psychologically, this stage can be
challenging in regard to maintaining motivation and adhering to the rehabilitation protocol. Lastly, the reaction to the return-to-sport phase is associated with passing strength and balance tests to be able to resume sport specific training without limitations or modifications.

In the first stage, the athlete's reaction to injury was influenced by the severity of the injury. If athletes perceived their injury to be severe, this led to more negative appraisals and emotions such as being hysterical, angry, shocked, and upset. For example, one participant commented “as soon as it happened, I knew something was definitely wrong, like it was a serious injury. It wasn’t a pain I’d ever felt before” (p. 98). This athlete then described their emotions as “I was just a little bit hysterical because I knew I was a least done for the year” (p.98) and “afterwards I was angry” (p.98). Behaviorally during this phase, athletes sought out social support from family members, teammates, coaches, and athletic trainers.

In the reaction to rehabilitation phase, participants had a variety of cognitive appraisals and emotions. The most common cognitive appraisal during the rehabilitation phase was questioning the rehabilitation process in terms of the perceived value and the difficulty of the rehabilitation program. This led to a dominant emotional response of frustration, specifically in their lack of strength and mobility, and the slow progress of rehabilitation. Behaviorally, athletes mentioned being cautious during this phase and seeking social support, mainly from athletic trainers (Clement et al., 2015).

In the third phase, reaction to return-to-sport, Clement and colleagues reported athletes having mixed appraisals and emotions as athletes were both excited and nervous about their return to sport. Additionally, athletes appraised their injury in terms of the lessons learned (e.g., making the athlete stronger, gaining a greater appreciation). One major concern for athletes during this phase was re-injuring themselves, which led the athletes to be cautious and hesitant as
they began competing again. For example, one participant declared “I wasn’t sure how it could hold up […] It made me more cautious about what I do, and I see things not like this, this, and this can happen, whereas before I could have cared less before I did that” (p. 100).

Whereas Tracey (2003) focuses on the relationship between cognitions and emotions, Carson and Polman (2008) and Clement et al. (2015) extended this relationship to include behavioral responses. The integrated model (Wiese-Bjornstal et al., 1998), which will be discussed in the following section, outlines the relationship between these responses as being a bi-directional and cyclical in nature. This suggests that one’s cognitive appraisals influences their emotions which then influences the behavioral responses and vice versa. Thus, the current study expanded on the findings of these studies to gain an understanding of participants’ psychological, emotional, and behavioral responses to a re-injury as these responses influence the rehabilitation experience and recovery outcomes. The research and interview questions were developed to assess these different responses in regard to a re-injury as compared to an injury in general.

In summary of the above studies, there is an amplitude of emotions and psychological concerns pertaining to sport injury and the recovery process. While the injury experience is individualistic and responses will vary depending on a multitude of factors (e.g., injury severity, coping resources, time in season, status on team), the aforementioned studies reported similar emotional and psychological responses. Examples of prevalent emotions identified in these studies are shock, anxiety, anger, frustration, depression, relief, jealousy, optimism, and fear (Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Johnston & Carroll, 1998; Tracey, 2003). Examples of common psychological concerns of the participants were lack of mobility and strength, loss of independence, loss of sport involvement, consequences of the loss of training and having a prolonged absence from their sport, concerns about their sport career,
and concerns about long-term health of their injured body part (Bianco et al., 1999; Carson & Polman, 2008; Clement et al., 2015; Johnston & Carroll, 1998; Tracey, 2003). The concern of being sidelined from their sport for an extended period, missing practices, and losing fitness strongly relates to the current study because when an athlete suffers a re-injury, they are now forced to take even more time off from their sport. Thus, these emotional responses and psychological concerns may be heightened and more intense with a re-injury, as compared to the first injury experience, which was explored in the current study.

**Psychological and Emotional Response to the Return-to-Play Phase**

The preceding studies have examined the psychological and emotional responses to sport injury throughout the entirety of the injury experience by breaking down the injury experience into different phases. While these studies did allude to certain psychological and emotional responses during the return-to-play phase of injury, the following studies provide a more in-depth description of the unique psychological and emotional challenges associated with the return-to-play phase specifically.

This return-to-play phase is significant because although athletes are able to resume their sport participation following a medical clearance, this physical readiness may not be synonymous with psychological readiness to return to sport. For example, Webster et al. (2018) conducted a quantitative study in which they discovered psychological readiness was statistically different in athletes who were cleared to resume sport participation and those who were not cleared. Research has identified motivation, confidence, and fear of re-injury as psychological factors that influence the decision to return to sport participation (Ardern et al., 2014; Podlog & Eklund, 2004). Thus, this study aimed to expand on this existing literature that has investigated the psychosocial factors associated with the decision to participate in sport and the array of
emotions experienced in this phase as negative affective responses are related to lower return to sport rates (Ivarsson et al., 2017).

In a review paper, Podlog et al. (2011) summarized the psychosocial concerns among returning athletes. They determined re-injury anxiety, inability to perform to pre-injury standards, feelings of isolation, a lack of athletic identity, insufficient social support, pressures to return to sport from others, and self-presentational concerns (e.g., meeting performance expectations set by coaches and teammates, or upholding one’s reputation before their injury) as the most prominent worries of injured athletes (Podlog et al., 2011). This paper was applied to the current study with the intention of developing research and interview questions to investigate if these various psychosocial concerns are similar or different in a re-injury.

Furthermore, Burland et al. (2018) investigated the various psychosocial factors that influence the decision to return-to-play. In this qualitative study, researchers interviewed 12 athletes who underwent ACLR. Half of the participants had successfully returned to a cutting and landing sport, while the remaining participants did not return to sport at the time of the data collected. After comparing and contrasting these two groups in terms of psychosocial factors that influenced the decision to return or not, researchers identified six themes, hesitation and lack of confidence leading to self-limiting tendencies, heightened awareness post ACLR, expectations and assumptions about the recovery process influenced the decision to return to sport after ACLR, coming to terms with ACL injury led to a reprioritization, athletic participation helped reinforce intrinsic personal characteristics, and having a strong support system was a key factor in building confidence. The athletes reported having a fear of re-injury which resulted in physical hesitation as they did not feel confident in their knee, with some individuals reporting their knee still feeling unstable. In regard to the athletes deciding not to return, fear of re-injury and loss of
interest were commonly cited. On the contrary, those who did return had stronger athletic identity, had a strong social support system, and had higher levels of motivation. Thus, psychosocial factors such as fear of re-injury, motivation, athletic identity, social support, lower confidence, and other interests influenced the decision to return to sport post-ACLR (Burland, et al., 2018).

In the current study, the researcher was interested in gaining an understanding of these specific psychological factors in relation to a re-injury. For instance, how does having a fear of re-injury and then having this fear become a reality influence an athlete’s appraisals and overall rehabilitation experience? Since some may argue that the first injury experience was unsuccessful, what happens to an athlete's motivation during a second injury experience? Does injuring the same body part twice, lower an individual's confidence in that healed body part upon return-to-play? Fear of re-injury and re-injury anxiety will be discussed in more detail in a later section; however, these preceding studies suggest that an injury can lead to individuals not resuming their sport participation. Therefore, it is important to understand the various emotional and psychological responses that occur during this return-to-play phase of not only the index injury, but also with a re-injury as re-injured athletes have already returned to sport once to only be injured again. Thus, how does the cycle of injury, rehabilitation, return-to-play, re-injury, rehabilitation influence the psychological and emotional responses of the return-to-play phase after a re-injury?

Summary of Psychological and Emotional Response to Sport Injury

The emotional responses and psychological concerns regarding sport injury have been extensively researched. To help organize the assortment of emotions and challenges injured athletes encounter throughout their injury experience, many researchers employ a phase-like
approach. Even though researchers use different names for the stages, they are all similar to Kamphoff et al. (2013) proposed three phases of rehabilitation: reaction to injury, reaction to rehabilitation, and reaction to return-to-play. The reaction to injury phase encapsulates the athlete’s response to the onset of the injury through the diagnosis. The reaction to rehabilitation phase includes the response to treatment and the rehabilitation protocol. Lastly, the reaction to return to play phase highlights psychological and emotional reactions once the athlete is physically cleared to resume sport participation. By organizing the injury experience into these phases, it allows researchers to assess the dynamic nature of injury and how an injured athlete's response to the injury will vary throughout the rehabilitation process. These phases were applied in the present study to help organize the lived experiences and the psychological and emotional responses to a re-injury in these distinct phases.

When looking at the progression of the emotional response to injury over these three phases, research has shown there is a positive linear relationship between emotional response and rehabilitation progress in which negative emotions are gradually replaced with more positive emotions (e.g., optimism, hope, determination, enthusiasm) as progress is made throughout the rehabilitation journey (Evans & Hardy, 2002; Langford et al., 2009; Madrigal & Gill, 2014; Morrey et al., 1999; Shapiro et al., 2017; te Wierike et al., 2012). While the return-to-play phase is an often exciting and highly anticipated time, there is sometimes a reappearance of adverse emotions and psychological concerns as injured athletes are medically cleared to participant in sport again (e.g., fear of re-injury, frustration of not being able to perform at pre-injury level, anxiety of not earning spot back on team or starting lineup; Crossman, 1997; te Wierike et al., 2012). The injury experience is unique to each individual and the emotional responses and psychological concerns will be different for each individual. It is imperative that individuals
working with injured athletes (e.g., athletic trainers, sport psychology consultants, coaches) address the psychological aspect of injury in addition to the physical nature of injury as maladaptive reactions can be detrimental to the injury experience in terms of both the overall experience and returning to play outcomes. In addition, it may be important for sport personnel to consider the psychological and emotional challenges of suffering a re-injury as this may lead to more intense and debilitative emotions and concerns.

**Fear of Re-Injury**

*Defining Fear of Re-Injury*

As discussed earlier, fear of re-injury is a salient emotion experienced among injured athletes, especially during the return-to-sport phase. While majority of the literature uses the term fear of re-injury (e.g., Hsu et al., 2017; Lentz et al., 2015), several other terms have been used interchangeably including kinesiophobia (e.g., Cozzi et al., 2015; Kori et al., 1990), fear-avoidance beliefs (e.g., Baez et al., 2019), and re-injury anxiety (e.g., Sheinbein, 2016; Wadey et al., 2014; Walker et al., 2004). Kinesiophobia is defined as “an excessive, irrational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or reinjury” (Kori et al., 1990, p. 37). This suggests athletes exhibit fear of re-injury when they are preoccupied with the ineffective thoughts pertaining to the consequences of sustaining another injury, such as missing more time away from their sport, pain, and implications regarding their long-term athletic career and health. Walker and Thatcher (2012) defined re-injury anxiety as “worries over the possibility of an injury recurring after an initial injury of the same type and location” (p. 239). Fear-avoidance beliefs are defined as “fear of pain
that causes avoidance of behaviors that could produce pain or re-injury” (Genoese et al., 2018, p. 187).

While these terms may be slightly different, they are similar in that they suggest injured athletes are concerned with suffering a re-injury, and this concern may present as fear-related or anxiety-related behaviors. Walker (2006) argue that fear-related behaviors are present when there is an immediate and definite sense of danger to a re-injury, like having to go through the same movement that resulted in the first injury. As Podlog et al. (2011) identified, fear of re-injury may appear as the athlete hesitating or backing off during specific movements. In regard to anxiety-related behaviors, these behaviors relate to the anticipation of a re-injury, not an immediate sense of danger. Thus, these types of behaviors would include the persisting thoughts and worries over the possibility of a re-injury occurring (Walker, 2006). In the current study, the researcher acknowledged the slight difference between these two terms; however, the researcher will use them interchangeably as some athletes may identify stronger with one term than the other. Regardless, fear of re-injury and re-injury anxiety are prominent emotions experienced during the injury process and can be disruptive if the fear or anxiety persists intensely (Walker et al., 2004).

Common indicators of an athlete with a high fear of re-injury include being more cautious, hesitating during certain movements, having a lack of confidence in the injured body part, holding back, giving less than maximal effort, and having a greater mood disturbance regarding the rehabilitation process (Ardern et al., 2012; Podlog et al., 2011). This fear is related to the mechanism in which the first injury occurred, such as going through the same movement patterns that caused the original injury (Carson & Polman, 2012; McVeigh & Pack, 2015). In
addition, fear of re-injury is related to the fear of suffering the consequences of an injury. For example, Taylor and Taylor (1997) highlighted in their study that two participants with higher re-injury anxiety were anxious about the possibility of having to face the lengthy rehabilitation period again, enduring the pain again, and believed that their injured body site was weaker and vulnerable.

Research has shown fear of re-injury is more prevalent in athletes who sustained a severe injury (Cassidy, 2006; Covassin et al., 2015), engage in high-risk sport activities (Gignac et al., 2015; Grindem et al., 2016), have unusual and frequent setbacks in rehabilitation (Podlog & Eklund, 2006), and who have a higher perceived value of their sport participation (Gignac et al., 2015). Severe injuries often result in a longer rehabilitation period which may result in a higher fear of re-injury because athletes fear suffering a second injury and having to undergo a lengthy rehabilitation period again, missing even more time away from their sport. High risk sports are sports that involve cutting and jumping movements, which are common mechanisms and risk factors to injury (Grindem et al., 2016). Athletes who have frequent setbacks in the rehabilitation process, regardless of severity, may have lower confidence in their injured body part which can lead to re-injury anxieties and fears. In regard to athletes having a higher perceived value of sport participation and fear of re-injury, this pertains to athletes with a higher athletic identity and investment in their sport. Brewer et al. (1993) defined athletic identity as “the degree to which an individual defines oneself in the role of an athlete” (p. 237). Those with higher athletic identity often have a more difficult time coping with an injury as the injury forces the athlete to not participate in their sport, threatening their athletic identity (Giannone et al., 2017). Therefore, individuals with a high athletic identity may have a higher fear of re-injury because they are
concerned with missing even more time away from their sport which is a significant aspect of their identity. This above information was used in this study in development of probing questions regarding fear of re-injury in hopes of gaining an understanding of what influences fear of re-injury and what fear of re-injury present as.

**Fear-Avoidance Model**

Fear of re-injury originated from the fear-avoidance model (FAM) developed by Lethem et al. in 1983 and describes an exaggerated pain perception exhibited by individuals with chronic low back pain. This model identifies two types of coping responses to pain, confrontation and avoidance. Confrontation is an adaptive response in which individuals recognize pain as a temporary irritant and confront their pain in a conservative manner, allowing the pain to resolve naturally. Conversely, the maladaptive avoidance response occurs when individuals refrain from physical or social activities that may result in pain.

The FAM proposed by Lethem et al. (1983) was later revised by Vlaeyen et al. (1995a) to create a cognitive-behavioral model of fear of movement/(re)-injury. If individuals have minimal fear, they engage in confrontation behaviors which leads to recovery. However, if individuals do encounter a high fear of re-injury, this leads to a cycle of avoidance behaviors, disability, disuse, and depression (Vlaeyen et al., 1995a). Thus, with this cognitive behavioral model, it supports the dynamic relationship between thoughts and behaviors, suggesting if individuals have a high fear of re-injury or re-injury anxiety, that this then can lead to avoidance behaviors and affect the outcome of the injury rehabilitation.

While these models were originated and validated in a population with chronic low back pain, they have been applied to athletic injuries and the pain associated with sport injury. Similar to how individuals with low back pain avoid movement patterns that either cause pain or further
injury, injured athletes also may experience this fear of pain or re-injury which can lead to athletes ceasing their sport participation in order to avoid potential re-injury. The following sections summarize research that explains how fear of re-injury and re-injury anxiety impact rehabilitation and return-to-play outcomes and can lead to a subsequent injury.

**Implications for Return-to-Play Outcomes**

The FAM suggests a fear of pain or re-injury can lead to an avoidance response which can have an adverse effect on return-to-play outcomes because the goal of the injury recovery process is for an athlete to successfully return to their pre-injury level and continue playing the sport they love. However, a multitude of studies have supported that persisting or increased levels of fear of re-injury can play a debilitative role in the rehabilitation process and influence an athlete’s decision to return to sport (Hsu et al., 2017). The following studies demonstrate that fear of re-injury is a commonly cited reason to stop playing sport and that individuals with higher fear of re-injury are less likely to return to sport following an injury.

In a literature review paper, Baez et al. (2019) evaluated the relationship between the FAM and poor outcomes of ACLR, defined by failure to return to pre-injury performance levels. Based on existing literature, the researchers identified self-efficacy as a mediating factor between fear of re-injury and return to play outcomes. Researchers defined self-efficacy as “an individual's belief in his or her ability to complete a behavior or succeed in a task and is associated with cognitions, emotions (including fear), and behavioral outcomes” (p. 169). This suggests that individuals with low self-efficacy, their fear of re-injury will be more debilitating and lead to greater avoidance behaviors, disuse, disability, and depression. In other words, athletes who have high levels of fear of re-injury following ACLR, will have greater avoidance behaviors, like not engaging in movements similar to those involved in their initial injury. Since
the return-to-sport phase is accompanied by frequent exposure to similar situations that may have resulted in the injury, this can lead to avoidance behaviors such as discontinuing sport participation because of fear or anxiety of being injured again. If an athlete's fear of re-injury is not addressed, it can become problematic and lead to athletes dropping out of sport.

In a cross-sectional study, Filbay et al. (2016) qualitatively studied 17 athletes (56% male and 44% female, age \(M=36, SD=8\)) who underwent ACLR to assess the relationship between fear of re-injury, activity preferences, and lifestyle modifications on long-term quality of life. When analyzing fear of re-injury, three sub themes emerged which were fear accommodation, fear suppression, and fear avoidance. Fear accommodation referred to individuals who confronted their fear of re-injury by modifying their movements or participating in a lower level of competition. These individuals were ultimately satisfied with their knee function and quality of life and maintained an active lifestyle. Those who suppressed their fear, continued their sport participation in an unrestricted manner. However, this potentially led to further knee problems or subsequent injuries. The most alarming response is fear avoidance in which the injured athlete ceases sport participation, which can lead to an inactive lifestyle and lower quality of life. For example, a participant who had fear-avoidance described their physical activity as “pretty much nothing. I’m always a bit cagey still [...] it’s always in the back of my mind, watch your knee, watch your knee” (p.108). This emphasizes how the participants' fear of re-injury, as indicated by their concern for their knee, can lead to a cessation of sport and physical activity. Similar to Baez et al. (2019), this termination of sport participation as a result of an injury is alarming as the main goal of ACLR, or any sport injury rehabilitation program, is for the athlete to successfully return to their sport and perform at a pre-injury level. However, having a fear of re-injury may prevent the athlete from returning to sport at all.
In a case-control study, Lentz et al. (2015) compared physical impairment, function, and psychosocial measures of fear of re-injury and lack of confidence between three groups of participants. The groups consisted of those who did not return to sport following ACLR due to psychosocial reasons (e.g., fear of movement/re-injury, low confidence), those who did not return for other reasons (e.g., pain, swelling, knee instability, muscle weakness), and those who did return. Participants \((n = 73)\) were between the ages of 15 and 50 years and had a unilateral ACLR. In addition to measures of physical impairment and knee function, fear of re-injury was assessed using the Tampa Scale for Kinesiophobia (TSK-11; Woby et al., 2005). These measures were given at six months and one year following their ACLR. The results indicated there was a significant difference for the TSK-11 scale between the group who did not return due to fear of re-injury and the other groups, indicating that those with higher fear of re-injury were more likely to not return to sport.

In a mixed-methods study design, Kvist et al. (2005) sought to determine if fear of re-injury is a significant factor in returning to pre-injury activity level, several years following ACLR. Three to four years following a primary ACLR, participants \((n = 62)\) completed questionnaires to assess fear of re-injury measured by the TSK (Vlaeyen et al., 1995b); knee related quality of life measured by the Knee injury and Osteoarthritis Outcome Score (KOOS; Roos et al., 1998), and completed an open ended survey that pertained to pain levels and current activity level. In this study, 53% of the participants were still participating at the same volume of activity (e.g., frequency and intensity) as they were before their injury; however, this percentage was slightly lower for the participants who returned to contact sports. Results also indicated the athletes who did not return to their pre-injury activity level had higher fear of re-injury indicated
by TSK scores, specifically, fear of re-injury accounting for 24% of the subjective reasons people did not return to pre-injury level (Kvist et al., 2005).

Disanti et al. (2018) interviewed ten high school athletes who underwent ACLR and had not returned to sport yet in regard to their perceptions of the barriers and recovery factors that have had an influence on their return to play status. In terms of barriers to return to sport, researchers identified three categories of variables that affected athletes’ decision to return-to-sport, physical (e.g., tiredness, stiffness, pain, discomfort), psychological (e.g., uncertainty, impatience, lack of motivation, fear of re-injury), and social (e.g., social comparison and role adjustment). In regard to fear of re-injury, the participants alluded to the length of the rehabilitation process and being exposed to similar injury mechanisms as magnifying the level of fear they had. For example, one athlete made the remark “I’m terrified of injuring myself again; I also just think how fluky my step was...I planted my foot, and I tore my ACL. So to think about that...is a little bit nerve-wracking” (p. 954). Another athlete had the fear of “I’m more concerned about the right [contralateral ACL] tearing...I’m just worried that I am not going to be as competent as I was and that’s going to reflect in my playing, because I feel if you're really timid in your playing, then you’re going to get hurt again” (p. 954). Thus, this study supports that psychological variables, like fear of re-injury, are prevalent in injury recovery and can influence athletes’ decision to return-to-play.

As the results of the preceding studies suggest, fear of re-injury may prevent athletes from returning to their sport. These studies examined fear of re-injury following an index injury, so what happens in individuals who have fear of re-injury, return to their sport, and then suffer an actual re-injury? It is likely that the return-to-sport outcomes following a re-injury will be significantly lower than a primary injury and therefore, re-injuries need to be given special
consideration so that sport personnel can help athletes cope with the suffering of a re-injury and help them to return to their sport. This pertains to the development and the purpose of the current study in which the researcher is interested in the lived experiences of an athlete’s fear of re-injury becoming a reality.

**Relationship with Re-Injuries**

Fear of re-injury and re-injury anxiety have been substantiated as prominent reactions to a sport injury, and in return can have undesirable implications on rehabilitation and return-to-play outcomes. The occurrence of an injury and fear of re-injury have been associated as a risk factor for a re-injury. Thus, this section will explore the different explanations as to how fear of re-injury and re-injury anxiety can lead to a second injury.

As previously discussed, Andersen and Williams (1988) developed the stress and injury model which identified prior history as a stressor that can predispose an individual to a subsequent injury. Thus, if an athlete is in a stressful situation, like performing the same movement that resulted in the original injury, this can elicit a stress response. This stress response can then cause both physiological and attentional changes, leading to further injury. Thus, this model supports previous injury and re-injury anxiety as stressors that can predispose athletes to a higher risk for a subsequent or re-injury. Statistically, athletes with a history of injuries were nine times more likely to become injured again compared to someone who had never been injured before (van Mechelen et al., 1996). The following will review the physiological and psychological changes that occur following an injury that predispose individuals to greater risk for another injury.

An et al. (2019) recognized fear as a cognitive and emotional response to a perceived threat, such as re-injury. In result, this threat may alter one’s attentional capacity, interrupting the
cognitive processing required to make decisions and for muscle coordination (Campbell & Ehlert, 2012). When athletes resume sport participation, athletes may be preoccupied with their thoughts about the consequences of suffering a re-injury, thus, decreasing their attentional capacity to sport related demands. This distraction may deter from the cognitive processing related to muscle coordination, altering the mechanics of the body which can lead to an actual re-injury. Therefore, in this case control study, An et al. (2019) compared 20 patients who underwent ACLR and 20 healthy control patients to assess how a negative emotional stimuli, such as emotionally evocative pictures of knee-injuries, affects the athletes neural processing and muscle coordination. Results indicate the group who underwent ACLR and were exposed to injury-related pictures, had greater fear responses and joint stiffness compared to healthy controls and the neutral fear group. Therefore, the findings suggest the fear stimulated by injury-related pictures, altered joint stiffness and functional joint stability. This is significant because if athletes are faced with a situation in a practice or game where there is a perceived risk for injury, like performing the same movement that led to the initial injury, this may lead to increased joint stiffness or instability, which can lead to further injury. This also relates to how fear of re-injury presents itself as hesitation or favoring the uninjured limb (Podlog et al., 2011).

In a review paper produced by Hsu et al. (2017), the researchers summarized previous studies findings regarding the implications of fear of re-injury on physical impairments and function. Fear of re-injury was found to increase the likelihood of re-injury by altering muscle recruitment (Murphy et al, 2003; Tagesson & Kvist, 2016; Williams & Andersen, 1998), decreasing dynamic knee stability (Hartigan et al., 2013), and limiting range of motion (Brown et al., 2016).
To understand the relationship between a first injury and subsequent injuries, Fulton et al (2014) conducted a systematic review to summarize the alterations in kinematics and motor planning in lower extremities that may increase the risk for re-injury or a subsequent injury. This systematic review included 102 quantitative (n = 26) and qualitative (n = 76) studies that found evidence suggesting a first lower extremity injury was associated with a re-injury. Specifically, the researchers investigated hamstring strains, ACL injuries, achilles tendon injuries, and ankle sprains as they determined these were the most common lower extremity injuries. It was concluded there are several neuromuscular factors that are present following an injury, such as changes in strength, proprioception, and kinematics. For example, a discrepancy between muscular strength in the previously injured and the non-injured limb that can lead to instability of joints and alter movement biomechanics. With proprioception deficits, there can be a change in muscle recruitment which can lead to static and dynamic instability due to altered neural firing and decreased sensory awareness. Biomechanically, the researchers concluded an injury is accompanied by changes in peak torque, gait mechanics, and intra-articular and muscular forces. Thus, this systematic review describes the changes that follow a lower extremity injury that predisposes an athlete to a subsequent injury or re-injury.

Tagesson and Kvist (2016) continued this exploration of physiological changes after an injury, by comparing fear of re-injury and tibial translation after ACLR between individuals who suffered a re-injury and those who did not. This case series study included 19 patients (11 males, 8 females) who were 16 to 31 years old and underwent primary ACLR. Of the 19 participants, five were re-injured (three ipsilateral graft ruptures, two contralateral). When comparing the re-injury group and the non-re-injury group, the re-injured group had significantly greater fear of re-injury and greater static tibial translation at the pre-operative assessment. Thus, this study
supports fear of re-injury and physiological changes (static tibial translation) as risk factors for a re-injury.

Paterno et al. (2017) investigated clinical factors of strength, postural stability, functional performance on single-leg hop for distance tests, mobility, and knee laxity to determine if they predict a ACL re-injury. The participants \((n = 120, 78 \text{ females}, 42 \text{ males}; \text{ age range } 10-27 \text{ years})\) completed the International Knee Documentation Committee (IKDC) subjective form (Irrgang et al., 2001) and the KOOS (Roos et al., 1998). Participants were then tracked for two years post ACLR to assess for re-injury. Results indicate 20% of the participants suffered a re-injury (eight ipsilateral graft ruptures, 15 contralateral ACL injuries). After analysis, it was determined younger age (less than 19 years), higher knee related confidence, female sex, moderate normalized triple hop distance performance (1.34-1.90 times body height), and greater limb asymmetry have a higher risk for a second ACL injury. Thus, this study documents support that a history of previous injury is associated with higher risk of subsequent injury due to biomechanical changes and psychological concerns (e.g. lower confidence and re-injury concerns).

Paterno et al. (2017) identified fear of re-injury as a risk factor to subsequent injury, so Paterno et al. (2018) sought to investigate this relationship further and determine if self-reported fear predicts functional performance as well as a second ACL injury. Participants \((n= 40)\) were between the ages of 10 and 25 years and participated in cutting and pivoting sports. Four weeks after they received physical clearance to resume sport participation, participants completed the TSK-11 (Woby et al., 2005) and Marx Activity Rating Scale (Marx et al., 2001), performed a series of single leg hop tests, and completed an isometric quadriceps femoris strength test. Researchers followed up with the participants one-year post ACLR to identify incidence rates of
a subsequent knee injury. The participants were separated into two groups based on their score on the TSK-11, greater fear of re-injury \((n=19; \text{TSK-11 score } \geq 17)\) and lesser fear of re-injury \((n=21; \text{TSK-11 score } < 17)\). Those in the greater fear group had significantly lower levels of activity, were more likely to have a poorer performance on the single leg hop tests, and have less limb symmetry on isometric quadricep strength. 37.5% of the participants suffered a second ACL injury (20% ipsilateral graft rupture, 17.5% contralateral ACL tear). The ipsilateral graft rupture group had significantly higher fear of re-injury indicated by the TSK-11. Additionally, it was determined that participants who scored a 19 or higher on the TSK-11 were 13 times more likely to sustain an ipsilateral graft rupture within 24 months of their first ACLR. The researchers concluded that higher fear of re-injury was associated with higher risk for a second ACL injury and had worse functional performances.

As the previous studies demonstrate, research has established that certain injuries, such as ACL injuries or Achilles tendon ruptures, can predispose individuals to subsequent contralateral (i.e., opposite limb) of the same diagnosis (Arøen et al., 2014; Grindem et al., 2016; Jandacka et al., 2017; McPherson et al., 2019; Park et al., 2019; Paterno et al., 2012; Paterno et al., 2017; Paterno et al., 2018; Tagesson & Kvist 2016; Webster & Feller, 2016; Webster et al., 2019). The documented explanations for this are altered biomechanics and altered neuromuscular function that predispose both limbs to subsequent injury (Swärd et al., 2010). Therefore, the researcher is interested in re-injury of both the ipsilateral (i.e., same limb) and contralateral as research has supported there is a high prevalence of both ipsilateral and contralateral injuries.

Another variable that influences return-to-play is psychological readiness. McPherson et al. (2019) used a prospective longitudinal study design to evaluate the association between psychological readiness to return to sport and the incidence of second ACL injuries. Participants
were recruited following their primary ACL injury. They completed the ACL-RSI two weeks prior to their surgery and at their 12 month follow up appointment. The ACL-RSI assesses readiness to return to sport following ACL injury in three main categories: emotions, confidence, and risk appraisal, with a higher score indicating greater psychological readiness (Webster et al., 2008). In addition, the researchers followed up with the participants at two years post-surgery to determine incidence of an ACL re-injury. The study included 329 participants (118 females and 211 males; $M=25.3$, $SD = 8.7$). Fifty-two participants suffered an ACL re-injury (34 ipsilateral graft rupture, 18 contralateral). When comparing the two groups (re-injured group and non re-injured group), there was not a significant difference found in either pre-surgery or 12-month follow up ACL-RSI scores, except in younger patients (<20 years old). As the researchers identified, the younger population has an increased risk of a re-injury (Webster et al., 2014). Thus, it was concluded there is a significant and positive relationship between lower psychological readiness to return to sport and subsequent ACL injury in younger patients.

Younger age was also identified as a risk factor in several other studies (e.g., Andernord et al., 2014; Kaeding et al., 2015; Mohtadi et al., 2016; Shelbourne et al., 2009). Since younger age has been identified as a risk factor, the current studies population was college level athletes as they were more likely to have experienced a re-injury in their youth or during their college sport.

In regard to the current study, it was important for the researcher to consider these physiological and psychological implications of an index injury and how they may predispose an athlete to suffering a second injury of either the same or opposite limb. Physically, there are changes in biomechanics and muscle coordination that are risk factors for a re-injury. In addition, there are psychological concerns, like fear of re-injury and low self-confidence, that may increase the likelihood of a re-injury by altering the athlete’s attentional capacity. Thus, fear of
re-injury is a valid concern for athletes and needs to be addressed to prevent further injury. However, as the next section will highlight, re-injuries occur frequently in sport and therefore, there is a need to research the perceptions and psychological responses to suffering a re-injury. If an athlete has low confidence in their injured body part and has anxieties about re-injury and then sustains an actual re-injury, the psychological concerns are likely to be more prevalent and intense in a re-injury experience. If so, these concerns can greatly impact the overall injury experience and outcome, which was assessed in the present study.

**Re-Injury Research**

*Defining Re-Injuries*

As previously discussed, an injury can predispose an individual to a subsequent injury of the same or different type and location of injury. In sport injury literature, several terms have been used interchangeably to describe a second injury: re-injury, repeat injury, recurrent injury, exacerbations, and multiple injuries (Finch & Cook, 2014). A re-injury is defined as “an injury of the same type and at the same site as an index injury and which occurs after a player’s return to full participation from the index injury” (Fuller et al., 2006, p. 194).

*Incidence of Re-Injuries*

As highlighted in the epidemiology of sport injury section, injury is a common occurrence for athletes. Recent literature has begun to investigate the incidence rate of subsequent and re-injuries. For example, Gans et al. (2018) reported the epidemiology of ACL graft ruptures using NCAA ISP data. The researchers used the ISP data from 2004 to 2014 to assess the rates and patterns of primary and ACL re-injuries. There was a total of 1,105 ACL injuries, with one in nine (11%) of them being ACL re-injuries. The incidence rate of re-injuries
was 32 injuries per 10,000 A-Es. These re-injuries were more common in competition season than pre-season and in football, women's gymnastics, and women's soccer.

In a prospective cohort study, Malisoux et al. (2013) researched sport injury incidence rates in elite youth athletes. The sample of participants included 372 athletes (65.3% male, 34.7% female, $M=14.4$) from a local youth sports school aged between twelve and nineteen years old. Data was collected via demographic questionnaires and a sport diary in which the athlete noted their daily sporting activities in terms of duration, context, subjective training intensity, and any occurrence of a sport injury. Over the three-year observation period, 901 injuries were recorded. These injuries were broken down by new or re-injuries and by the observation year. In observation year one, the incidence rate of new and re-injuries per 1,000 A-Es were 3.14 and 0.76 respectively. For observation year two, the incidence rate of new and re-injuries per 1,000 exposure hours was 3.49 and 1.26 respectively. For observation year three, the incidence rates of new and re-injuries per 1,000 A-Es were 2.48 and 0.31 respectively. This translated to the proportion of re-injuries in the three observation years being 19.5%, 26.3%, and 11%, respectively.

As previously mentioned, younger age is a risk factor for subsequent injury. Thus, Rauh et al. (2007) investigated subsequent injury patterns in women’s high school sports. The researchers utilized data from the 1995 to 1997 National Athletic Trainers Association High School Injury Surveillance database for five varsity girls sports, basketball, field hockey, soccer, softball, and volleyball. These researchers assessed risk ratios for new and subsequent injuries. Subsequent injuries were further categorized into re-injuries (injury to the same body location after initial injury) and additional injury (new body location). Out of 25,187 athletes, 4,696 athletes experienced 5,640 injuries. Results indicate the risk of subsequent injury is three times
higher than the risk of the first initial injury and re-injuries were considered to have greater severity than new injuries. The researchers also discussed several patterns of subsequent injuries. When analyzing the differences between the five sports, field hockey and soccer had greater risk of a subsequent injury, and volleyball had the lowest risk. In terms of body location, re-injuries occurred more frequently in the shoulder, knee, and lower leg with injuries such as stress fractures, rotator cuff injuries, hamstring strains, and ACL injuries being the most common re-injuries.

To continue with the youth population, Webster and Feller (2016) explored the reinjury rates in ACLR patients younger than 20 years old ($M=17.2$). The researchers used a cohort study design with 354 patients (229 males, 125 females) who underwent primary ACLR. Researchers followed up with patients for an average of five years to determine incidence of subsequent ACL injury. Results revealed 35% of the participants suffered a subsequent ACL injury (18% suffered an ipsilateral graft rupture and 17.7% suffered a contralateral ACL injury). Majority of the subsequent injuries (74%) occurred within the first two years of the primary ACLR. Furthermore, the researchers divided the participants into those younger than 18 years and those who were 18-19, and by sex. It was determined younger patients and males had the highest prevalence of re-injuries.

In 2009, Swenson et al. published a study that investigated the differences in patterns by sport and gender between re-injuries and new injuries. The National High School Sports-Related Injury Surveillance System was used to obtain injury incidence and A-Es from 2005 to 2008 in nine sports: football, boys’ and girls’ soccer, volleyball, boys’ and girls’ basketball, wrestling, baseball, and softball. These researchers defined re-injury as “injuries that occurred to a location on the body that sustained the same type of injury previously” (p. 1587). The injury incidence
rate was calculated to be 24.4 injuries per 10,000 A-Es. Of the reported injuries, 10.5% were re-injuries which resulted in an injury rate of 2.57 per 10,000 A-Es. To summarize the patterns of re-injuries the researchers investigated, rates were higher in competition than practice, football had the highest rate of re-injuries with baseball and softball the lowest, boys were more likely to suffer a re-injury, and the most common re-injuries were ligament sprains, muscle strains, concussions, dislocations, and contusions.

Paterno et al. (2012) were also interested in the incidence of subsequent ipsilateral and contralateral ACL injuries in a young active population. These researchers employed a prospective case-control study design to compare ACL incidence rates between those who have previously undergone a primary ACLR (n = 63, 42 females and 21 males) and those with no prior knee injury (n = 39, 30 females, nine males). Participants in both groups participated in pivoting and cutting sports. Data regarding demographics, number of A-Es and occurrence of injury was collected for one year following return to sport. The findings reported the previously injured group has a 15 times greater risk of subsequent injury as compared to the control group sustaining a first ACL injury. Specifically, 25.4% of the ACLR group sustained a subsequent injury (either ipsilateral or contralateral) as compared to 2.6% in the control group. In regard to the subsequent injuries, the majority were contralateral and occurred more in female participants.

Paterno et al. (2014) extended this study to include a longer follow up period (two years as compared to first year). This study included a total of 125 participants aged 10-25 years and were separated into those who previously had ACLR (n = 78, M=17.1, SD=3.1) and those who had not (n = 47, M=17.2, SD=2.6). Same as the previous study, the participants were contacted every two to four weeks for two years, via phone or email, to assess occurrence of an injury and A-Es. In the ACLR group, 29.5% suffered a re-injury, whereas in the control group, 8.5%
suffered an ACL injury. Of the re-injured group, 69.6% were contralateral injuries. This translated to athletes who have had an ACLR having a six times higher risk for an ACL injury than athletes who have never experienced a knee injury.

In 2009, Shelbourne et al. assessed the incidence of subsequent injury to either knee within five years post-ACLR of individuals who used a patellar tendon autograft. They also investigated the relationship of age, sex, and activity level with subsequent ACLR injuries. Of the 1415 participants, 5.3% had injury to contralateral knee and 4.3% had injury to their ipsilateral knee. There was a significant difference between occurrence of contralateral injuries between genders, with higher prevalence in females. Furthermore, the risk of a second injury was higher in younger ages and the risk decreased as age increased. This is attributed to higher activity levels in younger athletes.

As these studies suggest, re-injuries are a common occurrence within sport. Research has provided evidence that re-injuries are oftentimes more severe than the primary injury and may lead to long-term cumulative effects on the injured body site (Rauh et al., 2007). In addition, it is supported that contralateral injuries of the same diagnoses are common as well. Therefore, the current study defined a re-injury as “a repeat episode of a fully recovered index injury” (Fuller et al., 2007, p. 197) in either the ipsilateral or contralateral limb. Re-injuries to either limb are being considered because the researcher is interested in the experience of individuals who have to undergo the same rehabilitation for a second time. In addition, the above studies recognize that re-injuries are common in younger populations. Therefore, the target population for this study was college aged athletes who have had a re-injury within a 5 year period, which could have been during their participation in high school sports or college sports.

Comparing Return-to-Play Rates Between First and Second Injuries
As the previous studies support, re-injuries are a valid concern for athletes due to the high incidence rates. Since the primary goal of injury rehabilitation is to resume sport participation at pre-injury performance level, it is a major disappointment to suffer a re-injury and have to undergo the rehabilitation phase for a second time. Furthermore, several studies have revealed that the outcomes of a second reinjury are poor in terms of returning to sport and at a pre-injury performance level.

For example, Webster et al. (2019) used a case series design to compare the rates of return after a contralateral ACL injury (second ACL injury) compared to a primary ACL injury. Participants were recruited from a database if they had undergone primary ACL reconstruction, then suffered a contralateral ACL injury, and were at least 2.5 years post second ACLR. Participants \((n=147)\) completed a survey to assess level of sport participation and performance before and after both knee surgeries, and the athlete’s reasons for discontinuing their sport participation. In addition, the IKDC (Irrgang et al., 2001), Marx Activity Scale (Marx et al., 2001), and KOOS-QOL (Roos et al., 1998) questionnaires were used. Out of the 107 participants (62 male, 45 female, \(M = 23\) years, \(SD = 7\)), only 40% returned to sport following a subsequent contralateral surgery. Fear of re-injury was the most commonly cited reason for not returning to sport after both the first and second injury.

While Webster et al. (2019) analyzed contralateral injuries, Grassi et al. (2015) sought to determine the return-to-sport rate after revision (ipsilateral) ACLR. In this meta-analysis, the researchers searched several databases for studies that reported outcomes of both first and second ACLR which resulted in 23 studies being included. These studies included a total of 1090 participants. In the studies that reported gender, revision ACL was performed in 318 males and 187 females \((M = 27.7,\) range 13-60 years). In terms of return to sport outcomes, 84% returned to
sport at any level, 52% returned to pre-injury level, and 51% returned to high level/competitive sport. In the studies included, three studies reported reasons the participants did not return to sport following ACL revision, which were summarized as knee related problems, fear of re-injury, and other reasons.

In the same study design and procedure as Webster et al (2019), Anand et al (2016) investigated the return to sport outcomes after a revision ACL surgery. This study included 109 participants (81 males, 29 females, $M=28$, $SD=7$) who all played sports that involved cutting and pivoting. Results indicate 46% returned to their pre-injury level of sport after revision surgery as compared to 50% following primary ACLR. In addition, 28% and 22% did not return to sport at all following revision and primary surgery, respectively. Thirteen percent also suffered a rupture of the revision ACLR (i.e., a third ACL injury).

Furthermore, in a previously discussed study that documented the epidemiology of ACL re-injuries in NCAA athletes, Gans et al. (2018) also reported the differences in return-to-play rates between the first ACL surgery and the second. Succeeding the first ACLR, 87% of the collegiate athletes returned to sport and 3.5% of those who returned suffered a second ACL injury. Of those individuals who sustained a re-injury, only 50% returned to sport. Thus, the return to play rate was profoundly lower following the re-injury (50% as compared to 87%).

In summary, these above-mentioned studies indicate re-injuries have poorer outcomes, defined by return-to-play rates, than an index injury. Thus, is it fair for sport personnel to approach a re-injury the same as any other injury? As it will be discussed later, there is a lack of research that has examined athletes’ experiences with a re-injury. Therefore, the current study aims to fill in this gap to help better understand the challenges of suffering a re-injury which may explain why the return-to-play rates are substantially lower with a re-injury. The findings from
this project can be applied by sport personnel (e.g., athletic trainers, coaches, sport psychology consultants) to improve injury experience and return-to-play rates for athletes.

**Psychological Responses to Re-Injuries**

As supported in the previous section, re-injuries are associated with lower return-to-play outcomes. Therefore, there may be psychological and emotional responses of a re-injury that explain this poor return-to-play outcomes. For example, Feucht et al. (2016) used a prospective case series design to assess and compare athletes’ expectations of a primary and revision ACLR. This study was conducted in Germany and researchers recruited individuals undergoing either a primary \((n = 133)\) or secondary \((n = 48)\) ACLR via a sports medicine clinic. The participants (60% male, 40% female, \(M = 31.2, SD = 10.6\)) completed a questionnaire designed to assess the participants expectations at one-year post operation regarding the overall condition of their knee, return to sport, instability, pain, and their risk of osteoarthritis. Results indicated the revision ACLR group still had relatively high expectations but were significantly lower in regard to overall condition of the knee, return to sport, and pain when compared to the primary ACLR group. Additionally, it was found that younger and more active participants had higher expectations. This is important because it suggests that athletes who must go through a second surgery and lengthy rehabilitation process may feel defeated that their first surgery was unsuccessful, ultimately leading to lower expectations and potentially lower motivation to return to their sport as they concern the long-term health of their knee.

In a previously mentioned study that investigated the psychological aspects of sport injury (Bianco et al., 1999), an interesting paradox was presented regarding skiers who had sustained a re-injury. On one hand, an athlete just went through this injury and its rehabilitation, so the athlete was better equipped with useful information to better self-diagnose their injury,
cope, and mentally prepare for the rehabilitation process. Since the initial response to injury phase is characterized by uncertainty, having prior injury history may be beneficial in terms of lowering the initial stress or anxiety of not knowing what the injury is and entails. For example, one participant in the study stated “I knew immediately what I had done, you just know, you feel it, the dreaded pop when you’re tearing a ligament. I knew it would be a year before I would be back at any type of competitive level” (p. 162). Conversely, an athlete just spent an extensive amount of time in rehabilitation to return to their sport and now may have to go through the rehabilitation process all over again, which can be emotionally distraught and disheartening. This was indicated by another athlete’s statement “I just spent 24 months recovering. One year back in the saddle and I did it [the injury] again! I didn’t know if I was prepared to go through all that work just to have it all be blown away again” (p. 162). This disclosure gives the impression that the athlete may have lower motivation with the re-injury which may have debilitating effects on the rehabilitation experience and outcome. Therefore, while athletes have already gone through the injury experience beforehand and thus know what to expect in terms of rehabilitation, suffering a re-injury can be an emotional time for an athlete as they must be absent from their sport for even a longer time now. Hence, it is important for sport psychology consultants, athletic trainers, coaches, and other sport medicine professionals to assess the psychological implications of suffering a re-injury as they may be more severe than a first-time injury, which was assessed in the present study.

One study that has directly studied the psychological response to suffering multiple injuries is Casebolt (2018). In this thesis, the researcher employed a case study approach in which the researcher interviewed a 20-year-old female soccer player who had three ACL surgeries on the same knee within five years. The researcher was primarily interested in the
athlete’s confidence and the factors that influenced the athlete’s confidence upon returning to play after each surgery. Four themes were identified, motivation, support, knowledge, and appraisal. For motivation, the athlete was highly motivated to return to play after the first injury. For the second and third surgeries, the athlete’s motivation stemmed from her desire to overcome the odds since she knew the return-to-play odds were much lower after multiple severe injuries. This is portrayed in her quote discussing her second injury experience “knowing that not many people [come back from two ACL surgeries] … I also kind of tried to use that as a fuel. Not just to prove other people wrong, but to prove myself wrong (p. 26). In regard to the theme of knowledge, the athlete drew upon her education and experiences of having already gone through the surgery and rehabilitation, similar to the paradox identified above in Bianco et al. (1999). After the first injury, the athlete stated she was “kind of naïve” (p. 29) and “ignorance is bliss” (p. 29), so she returned to play at full force and was not concerned about the possibility of re-injury. However, when she tore her ACL again, her experiences with the first surgery influenced how she responded to her second injury, leading her to be more diligent with her rehabilitation and cautious during the return-to-play phase. She summarized this as “I think it would be impossible to not be a little more tentative going into a second one. Just because now you are like, oh this isn’t just 100% foolproof” (p.30). This supports that when the reality of suffering a re-injury becomes apparent, it can lower one’s confidence in their injured body part and can have adverse effects on the rehabilitation. The athlete’s appraisals strongly influenced her confidence levels. With this theme, the athlete focused on maintaining a positive outlook on her situation by reprioritizing and reframing her challenges into focusing on the lessons to be learned and trusting that these obstacles were only going to make her a stronger athlete and person. Overall, this
athlete was able to remain relatively high confidence and motivation levels after each surgery, and her positive response was influenced by social support and her previous injury experiences.

Casebolt (2018) is one of the first studies to examine the psychological and emotional responses to suffering multiple injuries. Similar to Bianco et al. (1999), there is an interesting paradox present in which athletes with a re-injury have already gone through the rehabilitation once, and therefore are educated and familiar with the protocol. Conversely, it may be difficult to maintain confidence and motivation with re-injuries, which may present as being more cautious and having more re-injury concerns. The athlete in Casebolt was able to maintain her intrinsic motivation to return to sport after each surgery, however, this may not be the case for other athletes who have stronger re-injury concerns and who appraise their repeat injury in a more negative lens. Thus, while Casebolt (2018) narrowed his research to focus on confidence, the current study aimed to continue and expand upon the topic of re-injuries by focusing on the overall experience and specifically how fear of re-injury may mediate how an athlete appraises and responses to suffering a re-injury.

Summary of Literature Review

The purpose of this literature review was to explore the current research on sport injury in general, fear of re-injury, and re-injury experiences. This knowledge was used by the researcher to formulate her research questions and interview questions. As the above-mentioned studies demonstrate, there is a lack of studies investigating the psychological effects of an athlete suffering a subsequent or re-injury. As it has been substantiated fear or anxiety of re-injury as a salient emotion in the injury experience, the reality of suffering another injury after spending significant time in rehabilitation and away from their sport can be quite emotional and a difficult time for athletes. The researcher was primarily interested in what happens when an individual
goes through an injury to only have return to their sport for them to suffer the same injury. Can a re-injury experience be approached the same as an index injury by sport personnel or are there specific and unique challenges to a re-injury that need to be better understood and addressed to improve the low return-to-play rates following a re-injury. Therefore, the purpose of this study is to understand athletes’ perceptions and lived experiences regarding the psychological and emotional responses to a re-injury. A secondary purpose is to understand the influence of fear or anxiety of re-injury on the rehabilitation experience of a re-injury.
Hello,

My name is Samantha Holder and I am a master’s student in the sport psychology program at Georgia Southern University. For my thesis, I am researching athletes’ experiences with suffering a re-injury. I would greatly appreciate it if you could forward this email to all athletes you work with and ask them to contact me if they meet the criteria below and are interested in participating in a 45-60 minute interview. My contact information is below for them to reach out to me and I will take over from there!

To be eligible to participate in the study, athletes must meet the following criteria:
- Current of former college level athlete (varsity, club, or intramural) over the age of 18
- Sustained a lower-body musculoskeletal re-injury (no head injuries) that kept the athlete out of their sport for at least 8 consecutive days.
  - A re-injury is defined as a repeat episode of a fully recovered index injury in either the same or opposite limb (e.g., having two ankle sprains, having two hamstring strains, having two ACL surgeries)
- Both the first and second injury were sustained during sport participation
- The time between the first and second injury was less than 5 years
- The second injury occurred within the past three years

If any athlete that meets the above criteria is interested in participating in the study or has any questions, I can be contacted at 951-219-7245 (cell), sh26514@georgiasouthern.edu. Or you can contact my research advisor, Dr. Megan Byrd, at 912-478-2274, mmbyrd@georgiasouthern.edu. I know that you are busy and likely inundated with requests and so I greatly appreciate your willingness to help with this project. Thank you!

Best,
Samantha Holder
APPENDIX F

INFORMED CONSENT

Informed Consent
for
College Athletes’ Experiences with Suffering a Re-Injury: A Phenomenological Investigation

1. This research is being conducted by Samantha Holder, a master’s student in the sport and exercise psychology program at Georgia Southern University, under the supervision of Dr. Megan Byrd, a faculty member at Georgia Southern University. This research is being conducted to fulfill thesis requirements towards obtaining a master’s degree.

2. Purpose of the Study: The purpose of this research is to understand athlete’s perceptions and lived experiences in regard to the psychological and emotional responses to a re-injury.

3. Procedures to be followed: Participation in this research will include voluntary completion of a one-time 45-60 minute interview over Zoom. The interview will be recorded using two methods. The first method is by using the zoom feature that allows the session to be recorded securely. The second method is by the use of an audio recorder device. After the researcher completes analysis, you will be sent back the transcript for you to review the researcher’s interpretations of your experience. This process is called member checking and is used to enhance the trustworthiness of the data. This will take approximately 20 minutes.

4. Discomforts and Risks: There is minimal risk involved with the participation in this study. There is a small risk of loss of confidentiality as the interview will be conducted virtually over Zoom. We are careful to ensure that the information you voluntarily provide to us is as secure as possible; however, you must be aware that transmissions over the Internet cannot be guaranteed to be completely secure. Your confidentiality will be maintained to the degree permitted by the technology being used. You will be subject to the privacy policy of Zoom. To prevent a breach of confidentiality, the researcher will use the passcode and waiting room features on Zoom. You will be required to enter a passcode before joining the meeting, preventing uninvited individuals from joining the meeting. The waiting room feature requires the host of the meeting, the researcher, to admit you into the meeting, ensuring you and the researcher will be the only people in the meeting. Another potential small risk is the discomfort of sharing your personal story regarding suffering a re-injury.

5. Benefits:
   a. The benefits to you as a participant include the opportunity to share your personal story and experiences with sustaining a re-injury.
b. The benefits to society include an understanding of the experiences of suffering a re-injury which can be used by sport personnel to improve the re-injury rehabilitation experience and outcome for athletes.

6. Duration/Time required from the participant: The interview is designed to last approximately 45-60 minutes. The member checking process will take approximately 20 minutes.

7. Statement of Confidentiality: Only the researcher and her committee will have access to your information. Your information will be secured in a password protected file on a password protected computer. Interview materials will be deidentified and when the results are published or discussed in conferences, no information will be included that would reveal your identity. After three years, all data will be deleted.

8. Future use of data: Deidentified or coded data from this study will be destroyed after a three-year period. You will not be identified by name in the data set or any reports using information obtained from this study, and your confidentiality as a participant in this study will remain secure. Subsequent uses of records and data within the three-year period will be subject to standard data use policies which protect the anonymity of individuals and institutions.

9. Right to Ask Questions: Participants have the right to ask questions and have those questions answered. If you have questions about this study, please contact the researcher named above or the researcher’s faculty advisor, Dr. Byrd, whose contact information is located at the end of the informed consent. For questions concerning your rights as a research participant, contact Georgia Southern University Institutional Review Board at 912-478-5465 or irb@georgiasouthern.edu.

10. Voluntary Participation: Your participation in this study is voluntary. You have the right to choose not to participate in this study. If you consent to participate in this study and later decide you do not want to participate further, you may withdraw your consent at any time without penalty. If you would like to withdraw your participation at any time, please inform the research investigator listed in this consent form.

11. Penalty: There is no penalty for deciding not to participate in the study. You may decide at any time you don’t want to participate further and may withdraw without penalty or retribution.

12. All information will be treated confidentially. There is one exception to confidentiality that we need to make you aware of. In certain research studies, it is our ethical responsibility to report situations of child or elder abuse, child or elder neglect, or any
life-threatening situation to appropriate authorities. However, we are not seeking this type of information in our study nor will you be asked questions about these issues.

13. You must be 18 years of age or older to consent to participate in this research study.

You will be given a copy of this consent form to keep for your records. This project has been reviewed and approved by the GS Institutional Review Board under tracking number H21204.

Title of Project: College Athletes’ Experiences with Suffering a Re-Injury: A Phenomenological Investigation  
Principal Investigator: Samantha Holder, sh26514@georgiasouthern.edu  
Research Advisor: Dr. Megan Byrd, Hollis Building 1103B P.O. Box 8076 Statesboro, GA 30460, 912.478.2274, mmbyrd@georgiasouthern.edu

Please select an option below to indicate whether or not you agree to participate in this research:

- Yes, I read the terms above and consent to participate in this research.
- No, I do not consent to participate in this research.
APPENDIX G

INTERVIEW GUIDE

Demographics/Rapport Building
1. What is your gender?
2. How old are you?
3. How do you identify racially?
4. What year are you in school?
5. What sport do you play? What level do you play? (e.g., club, DI, DII, DIII)
6. Could you tell me about how you got into [sport]?
   a. What are some of your favorite memories in your sports career so far?
7. Could you tell me about your injury history? (Identify index and re-injury)
   a. How long ago was the first injury?
   b. How long ago was the second injury?

Index Injury
1. Could you tell me about your first injury?
   a. What was your role on the team when you got injured (e.g., starter vs. nonstarter, year on team, time in season)?
   b. What was your initial reaction when the injury happened?
   c. Could you describe your recovery experience to me?
      i. How long were you away from your sport?
      ii. What did your rehab entail?
      iii. Did it go as expected? Did you have any challenges or obstacles?
   d. How did you cope with the rehabilitation process?
      i. Did you use any specific coping strategies? If so, what were they?
   e. If any, who were the people you felt most supported by during your injury experience?
      i. How did these individuals make an impact?
2. What were your thoughts and feelings concerning returning to play after the first injury?
   a. Did you experience any fear of re-injury or re-injury anxiety?

Re-Injury
3. Could you tell me about your second injury?
   a. What was your role on the team when you got injured?
   b. What was your initial reaction when the injury happened?
   c. Have you been cleared to return-to-play?
      i. If yes, tell me about your recovery and return-to-play experience.
         1. What were your thoughts and feelings concerning the rehab?
a. Did you have any fear of re-injury during the rehab phase?

2. What were your thoughts and feelings concerning returning to play?
   a. Did you have any fear of re-injury during the return to play phase?

3. What level did you feel you returned at compared to the first injury?
   ii. If no, tell me about your recovery experience so far.
      1. What are your thoughts and feelings concerning the rehab so far?
      2. Have you had any re-injury anxiety during the rehab so far?
      3. Is it going as expected? Has there been any ups or downs?
      4. How are you coping with the rehabilitation process? Any coping strategies?
      5. What are your thoughts and feelings about returning to play eventually?

   d. If any, who were the people you felt most supported by during your second injury experience?
      i. How did these individuals make an impact?

4. How did going through the same injury rehab the first time influence the second injury experience?
   a. Is there anything from the first injury that made going through the second injury easier? More difficult?

5. Did you notice any differences between your first injury experience and the second injury experience?
   a. If yes, what were those differences?
      i. Initial thoughts and emotions of both
      ii. Rehabilitation process/treatment
      iii. Social support
      iv. Expectations
      v. Motivation level/rehab adherence
      vi. Thoughts and emotions about returning to play
      vii. Short term and long-term sport career goals
   b. How did these differences affect your recovery and experience?

6. Did you notice any similarities between the first injury experience and the second injury experience?
   a. If yes, what were those similarities?
   b. How did these similarities affect your recovery and experience?

7. Did you experience any fear of re-injury or re-injury anxiety after the second injury?
a. If they did after both the first and second injury, did you notice any differences in the severity/intensity of the fear or anxiety?
   i. How do you think having this fear of re-injury after the first injury, and then that fear becoming a reality, influenced your overall injury experience with the second injury?

b. If they did not after the first injury but did after the second, what are some reasons as to why you think you didn’t have this fear after a first injury, but did after the second injury?
   i. How do you think this fear of re-injury you experienced in the second injury impacted that rehabilitation?

c. If no fear or anxiety of re-injury after either injury, how did you maintain confidence in your [injured body site] even after it has been injured multiple times?

8. **What has been the most challenging part of going through the same injury and rehab for a second time?**
   a. Did you experience any unexpected challenges in the second injury?
   b. How did you cope with this challenge(s)?
   c. What lessons have you learned from this challenge?

9. **What advice would you give to someone who has suffered a re-injury?**

10. Is there anything else you would like to talk about that hasn’t brought up yet?
APPENDIX H
DEFINITION OF TERMS

*Injury*: The NCAA defines injury by the following criteria: (1) occurred as a result of participation in organized intercollegiate practice or contest, (2) required medical attention by a team certified athletic trainer or physician, and (3) resulted in restriction of participation or performance for one or more days beyond the day of the injury (“NCAA Injury Surveillance Program”, 2019).

*Re-injury*: “an injury of the same type and at the same site as an index injury and which occurs after a player’s return to full participation from the index injury” (Fuller et al., 2006); used interchangeably with recurrent injury, subsequent injury, repeat injury, and second injury

*Index injury*: an athlete’s first injury, in terms of a specific diagnosis and body location; used interchangeably with first injury and primary injury

*Fear of re-injury*: “worries over the possibility of an injury recurring after an initial injury of the same type and location” (Walker & Thatcher, 2012, p. 239); used interchangeably with re-injury anxiety, kinesiophobia, and fear-avoidance beliefs.
APPENDIX I

GENERAL NARRATIVES

As outlined in the methods section, data analysis consisted of creating situated narratives where the researcher went through the participants responses to individual interview questions and selected direct quotes that related to the themes identified. The below table represents the general narratives which combines the situated narratives for all participants. Included in the table are the interview questions, direct quotes, and the theme that quote related to. Note: this is only a select list of quotes and not all codes are represented.

<table>
<thead>
<tr>
<th>1. Could you tell me about your injury history?</th>
<th></th>
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</thead>
</table>
| “And then I had my main injury. And that was like the first I had ever been seriously like, like this is bad.” – Rose, Club Volleyball | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “But never had surgery, that was really it, nothing major really at all.” – Gaby, Soccer | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “Never got hurt so that was really my first major injury other than little bumps and bruises.” – Stuart, Lacrosse/Disc Golf | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “For the most part I never really encountered like major injuries I guess.” – Vivian, Track and Field | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |

<table>
<thead>
<tr>
<th>2. Tell me more about your first injury experience.</th>
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</table>
| “I was just like mentally not okay. I was definitely really depressed, like I was really sad when it happened, trying to go through it during rehab” – Gaby, Soccer | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “I cried for eight hours all the way home […] the first ACL tear I think was the hardest on me mentally and physically because I did kind of go through a bad time in my life and I just went dark and low.” – Isabella, Soccer | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “I was really at a low point, and I just didn’t know how to handle my emotions just because I’ve never gone through it before.” – Gaby, Soccer | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Familiarity |
| “Because then it’s six weeks [original meniscus diagnosis] compared to six months [ACL injury]. That’s what really takes a turn. That’s a long period of time.” – Gaby, Soccer | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Misdiagnosis |
| “They told me I sprained it so I just had to do PT [physical therapy] and then I thought I was going to be able to play again. And the first I was cleared to do warm up and something happened during warm up and I | **Theme:** Prior Injury Experience and Knowledge  
**Subtheme:** Misdiagnosis |
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<th>Statement</th>
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<tr>
<td>told my dad something is not right. So, then they ordered an MRI and it was torn.” – Isabella, Soccer</td>
<td><strong>Concerns</strong></td>
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<tr>
<td>“I have been in the gym since I was three years old so it was really weird for me to get out of school and go home. Like I didn’t know what to do with myself, like I would go home and just sit and stare at the wall. Like what do I do now?” – Audrey, Cheer/Gymnastics</td>
<td><strong>Identity</strong></td>
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<tr>
<td>“My teammates were all my best friends so of course they were willing to drive me around, help me out, bring me stuff, bring me my work and stuff like that when I couldn’t” – Rose, Club Volleyball</td>
<td><strong>Social Support</strong></td>
<td><strong>Supportive Behaviors</strong></td>
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<tr>
<td>“What helped is that there were several other girls on the team that had torn their ACL or ACL several times and I think those girls were my biggest support system.” -Lexie, Soccer</td>
<td><strong>Social Support</strong></td>
<td><strong>Supportive Behaviors</strong></td>
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<tr>
<td><strong>3. Describe how you felt when you were cleared to return to play after your first injury?</strong></td>
<td><strong>Prior Injury Experience and Knowledge</strong></td>
<td><strong>Invincibility</strong></td>
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<tr>
<td>“I had a lot of people tell me that once you tear it, like your one ACL, like you have a big chance to tear the other one. And for me I was like that is not going to happen to me. It was completely out [of the question], like I got hurt because I got hit, like it was a contact injury. It wasn’t my myself [that caused the injury]. So I was like there’s no way I can get hurt again because I’ve always been so strong, like I lift, my legs are strong, like I’m constantly lifting and fit, there’s no way. Like let’s say someone hits me bad like maybe okay. But there’s like no way.” – Gaby, Soccer</td>
<td><strong>Concerns</strong></td>
<td><strong>Fear of re-re-injury</strong></td>
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<tr>
<td>“Even until this day, I’m still scared to dive sometimes because I don’t really want it to give out on me.” – Rose, Club Volleyball</td>
<td><strong>Concerns</strong></td>
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<tr>
<td>“That’s the hardest part when you go into a race, and this is maybe a month into your injury and you’re still not in shape and you know that you’re going to run super hard but you’re not going to be anywhere near your best.” – Raymond, Cross Country &amp; Track</td>
<td><strong>Concerns</strong></td>
<td><strong>Performance and Fitness Level</strong></td>
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<tr>
<td>“I was happy to be back finally, but at the same time I realized how much it put me back, so I guess frustrated again [that] I still have to go through all this work to get back to where I was fitness wise.” – Vivian, Track</td>
<td><strong>Concerns</strong></td>
<td><strong>Performance and Fitness Level</strong></td>
</tr>
<tr>
<td><strong>4. Could you tell me about your second injury.</strong></td>
<td><strong>Prior Injury Experience and Knowledge</strong></td>
<td><strong>Familiarity</strong></td>
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<td>“I was just in denial, honestly praying that maybe my knee just popped and it was just hurting or something, something that could have happened that made it hurt</td>
<td><strong>Concerns</strong></td>
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that bad, but that it wasn’t an ACL tear.” – Lexie, Soccer

| “It was a lot of do what makes you feel comfortable and do what your body needs because I have a lot of experience with what this injury is [from] the first time. […] And I do a lot of that because that’s what helped me the most the first time.” – Rose, Club Volleyball |
| Theme: Prior Injury Experience and Knowledge |
| Subtheme: Familiarity |

| I just could tell it was the same tear, same injury. It was the same pain again.” – Stuart, Lacrosse/Disc Golf |
| Theme: Prior Injury Experience and Knowledge |
| Subtheme: Familiarity |

| “I didn’t lie to the doctors this time. So, it was much longer. It was four weeks longer than the original time. But I think after I finished it, I definitely felt more comfortable.” – Audrey, Cheer & Gymnastics |
| Theme: Prior Injury Experience and Knowledge |
| Subtheme: Invincibility |

| “The first thing I thought is like my senior year is ruined, like I had been with the same girls since my freshman year, like I won’t be able to finish out with them. And I was so sad like I said because I wanted to finish out that year with my girls I came in with and really enjoy it with them.” – Gaby, Soccer |
| Theme: Concerns |
| Subtheme: Missing Out |

| “The biggest mental struggle was I’m not going to be as good as I can be.” – Rose, Club Volleyball |
| Theme: Concerns |
| Subtheme: Performance and Fitness Level |

| “That was the hard part too dealing with all my teammates being like ‘you are fine, it is going to be fine, you don’t know for sure, like wait until you go to the doctor’ and it’s like, when you do it once, you know when you do it again. So, it was trying to be like yeah but, I had no hope because I knew what I had done.” – Isabella, Soccer |
| Theme: Social Support |
| Subtheme: Unsupportive Behaviors |

| “I just know for overuse injuries, kind of being more informed on it because I know like our trainers, when it comes to overuse injuries, I don’t think their experience is pretty good with it. They are good at treating other impact injuries, but I mean there could be a lot more taught in that field of how to treat overuse injuries, because I swear it’s always take time off, take ibuprofen, and ice it.” – Raymond, Cross Country/Track |
| Theme: Social Support |
| Subtheme: Unsupportive Behaviors |

| 5. **How did going through the same injury rehab the first time influence the second injury experience?** |
| “This second time, I just feel like I handled it so much more maturely. I think I grew up too […] I was just mentally stronger, and I was physically stronger as well.” |
| Theme: Prior Injury Experience and Knowledge |
| Subtheme: Familiarity |
So, I think overall the first one was harder overall mentally, but I think that was because it was the first time I have been through it.” – Gaby, Soccer

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<tr>
<td>“I just kind of go numb to it [suffering re-injuries] but I just kind of deal with it the same, but this time with just more experience” – Raymond, Cross Country &amp; Track</td>
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<tr>
<td>“I felt a lot more confident in being able to recover because I knew what I needed to do to get myself better.” – Rose, Club Volleyball</td>
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<tr>
<td>“You know what to expect and I mean you just have more experience and the big thing if for me, like the first time around, they give you a way to treat it and you’re like okay and you do all the things, and then the second time around, you know what works and you know what doesn’t work. So, I mean I remember sitting there with the doctor or whoever and their telling me the stuff and I’m sitting there shaking my head like yeah but I’m just thinking to myself yead that’s not what I’m going to do, that won’t work for me. So, I mean the second time you deal with the rehab like I said before, it’s more independent and you’re more confident on how to address it.” – Raymond, Cross Country &amp; Track</td>
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<th>Theme: Concerns</th>
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<tr>
<td>“When you have a history of being injured, you get good with dealing with it, but yet you have to be careful and not identify as being injured.”</td>
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<tr>
<td>“6. Tell me about some differences between your first injury experience and the second injury experience.”</td>
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<tr>
<td>“I think I have accepted it more on this injury than I did the first one like quicker just because it’s like I can’t do anything about it and I can’t sulk about it because I already did that one time and it didn’t go well for me. Like physically, I think the difference is that I didn’t know anything the first time and I know more the second time.” – Isabella, Soccer</td>
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<th>Theme: Concerns</th>
<th>Subtheme: Fear of re-re-injury</th>
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<tr>
<td>“Definitely more so afraid of it now after the second injury. […] I had the surgery, I now know what happens if it happens again, still got three more menisci that can get torn, so definitely still worried about it getting torn, trying to be more careful with what I do now because I don’t want to have to go through another surgery.” – Stuart, Lacrosse/Disc Golf</td>
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<th>Theme: Concerns</th>
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<td>“It hit my ego a little hard. I kind of started thinking a little bit worse about myself because I was never really the girl that got injured. I was the one that just showed up and played. So, once I got injured, I was like ‘oh I’m the weak link now.’” – Rose – Club Volleyball</td>
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“And I think the PT, like nothing against them, but I think every time I was like ‘oh, I am in pain’, they would pull off and we just iced and thinking about it, if you don’t do much one day, that is then only two other days of the week that you are actually working. And with this one, at least with the rehab here, I don’t really care if I am in pain, I am working every single day so that is at least five days versus two or three days that I would work with my PT at home.” – Isabella, Soccer

| Theme: Social Support  
Subtheme: Environment |
| --- |

7. **Tell me about some of the similarities between your first injury experience and the second injury experience.**

| “I felt frustrated after both injuries […] It was very frustrating, like disappointed in myself that it happened again.” - Vivian, Track and Field |
| Theme: Prior Injury Experience and Knowledge  
Subtheme: Familiarity |

| “you can never prepare for the news that you are tearing your ACL. Like hearing both times that I tore it, the same emotions, like probably even worse the second time. It’s just not something you can ever prepare for.” - Gaby, Soccer |
| Theme: Prior Injury Experience and Knowledge  
Subtheme: Familiarity |

| “It’s going to suck just as bad.” – Lexie, Soccer |
| Theme: Prior Injury Experience and Knowledge  
Subtheme: Familiarity |

| “I was disappointed in myself because I knew this was a possibility and I wasn’t taking all the precautions they advised me to.” – Audrey, Cheer & Gymnastics |
| Theme: Prior Injury Experience and Knowledge  
Subtheme: Invincibility |

| “Am I going to be able to work to get to where I need to be or is this going to happen again? Like a slight fear would be is this going to happen again to me like once I get back?” – Isabella, Soccer |
| Theme: Concerns  
Subtheme: Fear of re-re-injury |

| “It was hard being away from the team, hard being away from practice, even if I did go to practice, it was kind of like standing up by the side and everyone’s busy doing everything, so I didn’t really want to bother anyone.” – Vivian, Track |
| Theme: Concerns  
Subtheme: Missing Out |

| “Rehab was much of the same almost after the surgery. It was back to PT (physical therapy). I went back to the same physical therapist from the first time, and so we did a lot of the same stuff per say.” – Stuart, Lacrosse/Disc Golf |
| Theme: Concerns  
Subtheme: Repetitiveness |

8. **Did you experience any fear of re-injury or re-injury anxiety after the second injury?**

| “This is like the second time I’ve had to deal with this in my college career alone. […] I had like that fear in my mind of like okay there’s a chance I’m going to do this again just because I’ve already hurt it twice and it’s obviously one of my weakest muscles apparently since I |
| Theme: Concerns  
Subtheme: Fear of re-re-injury |
keep hurting it. So yeah, I was definitely scared of hurting it again and like anytime I had any tightness down there, it would freak me out.” – Vivian, Track

9. **What has been the most challenging part of going through the same injury and rehab for a second time?**

“I really thought the doctor was just trying to scare me, because I had told the doctor I waited like three weeks to come in, so I thought at the time he was just trying to scare me like ‘no when something like this happens you need to come in immediately. Don’t put it off because these could be the consequences.’ I didn’t think he was serious about it.” – Audrey, Cheer and Gymnastics

“It was just frustrating having to wait that long to play again because it’s not a quick injury, it’s like six to nine months, so it’s like you are counting down the says until you can play again.” – Gaby, Soccer

“Being in an environment where you are around soccer every day and have to watch everyone else do it and you not be able to go out there and play, and you have to watch everybody, because I have to go to every single practice every day because I am still a part of the team, still have to go and support, and it just was kind of soul crushing just sitting there watching everyone take for granted what you can’t have and hearing them complain about practice of ‘I don’t want to run this sprint’ or ‘I don’t want to do this’, or ‘I don’t want to practice today’, and I was like I would sell my left leg to be able to practice today, like come on!” – Lexie, Soccer

“When you get injured, you get completely separated from the whole team. You almost get detached so you’re almost like socially isolated. So that’s a hard part, is just being away from a group that you’re always with, so you feel like you kind of lose a bond because you do workouts with each other, you work hard and you both kind of like struggle together, so that’s kind of what connects you to the team, like I don’t have any connection to these guys just because we’re on the same roster, it’s because we train together. So, when you stop training together, you might still be on the same team, but it’s like you didn’t go through that work out with me so I mean you can’t relate to me as well.”

“It just felt so repetitive in a way. I had gone through it once and I was just like ‘okay not going to have to do this again; and then going through it again was like ‘ugh’ but it was now my other knee and I am like ‘oh my god, holy crap, again?’” – Gaby, Soccer

| Theme: Prior Injury Experience and Knowledge | Subtheme: Invincibility |
| Theme: Concerns | Subtheme: Missing Out |
| Theme: Concerns | Subtheme: Missing Out |
| Theme: Concerns | Subtheme: Missing Out |
| Theme: Concerns | Subtheme: Repetitiveness |
“Most challenging part I think was just honestly dealing with it. Just knowing, especially on that second one and just knowing I already went through this, it was frustrating, like I feel like I already took care of it, like I already did everything correctly, and then I’m experiencing it again. So, it was definitely challenging just repeating the same process that I went through two years prior.” – Stuart, Lacrosse/Disc Golf

Theme: Concerns
Subtheme: Repetitiveness

“I would say the lack of being able to express myself because as someone who’s been a student-athlete or just an athlete in general for so many years and I can’t do the one thing that has given structure in my life for so long. I would say that’s the hardest thing because one way I express if I am stressed or if I’m angry or I had a bad day, I go and I run because it just clears my head. And I can’t do that.” – Lexie, Soccer

Theme: Concerns
Subtheme: Identity

“It’s hard to sustain more than one injury and still want to play.” – Rose, Club Volleyball

Theme: Motivation

10. What advice would you give to someone who has suffered a re-injury?

“You can’t let yourself get down about it because you’re not progressing. Every little thing is a win. I biked 0.2 miles more than I did yesterday, that’s a win.” - Lexie, Soccer

Theme: Coping Strategies

“For me, I just love the game so much and I want to keep playing for as long as I can. I just didn’t want it to end that way, so I wanted to write my own story and word hard and be back playing. Playing the game really makes me so happy and I just knew that when I came back, I would enjoy it and cherish it.” – Gaby, Soccer

Theme: Motivation

“I like running too much so there’s no way I could stop. So I would probably work through quite a bit of injuries before I stopped running.” – Raymond, Cross Country/Track

Theme: Motivation