“THERE’S MORE TO LIFE THAN SPORT”: ATHLETES’ EXPERIENCES COPING WITH CONCUSSIONS

by

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The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, a thesis/dissertation entitled:

“There’s more to life than sport”: Athletes’ experiences coping with concussions

submitted by Brittany Nicole Tekakarewes Epple in partial fulfillment of the requirements for

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Abstract

Sport-related concussions are emerging as a growing health concern, with the documented occurrence doubling over the last decade (Mrazik et al., 2016). Concussions in sport are often accompanied by a negative emotional experience (Elbin at al., 2014). One key to successfully overcoming concussions is an ability to cope with emotions associated with them (Hutchison et al., 2009). A thematic analysis of semi-structured interviews with 13 student-athletes (5 men, 8 women) was employed to investigate how athletes cope with and appraise the emotional experience of concussions in the Canadian varsity sport context. Four main themes were identified. Firstly, participants appraised their concussion as unique, emphasizing the individuality of the injury. Concussion was viewed as challenging due to limitations as a result of symptoms, timing of the injury and a difficult emotional experience in comparison to other sport-related injuries. Secondly, the team culture of playing through pain and injury influenced how participants viewed their concussion. Participants felt they had to accept this culture in order to be a successful athlete as injury is a sign of weakness and should therefore be viewed as part of the sport experience. Thirdly, participants described distractive coping as a way to manage their injury. By continuing to be active in life, participants felt they were able to overcome their concussion, which lead to a positive reappraisal of their injury where they began to see it as an opportunity for growth in their lives. Finally, participants described the challenge of navigating their concussion recovery with limited information provided and available to them. Misunderstanding of their injury both by themselves and others resulted in feelings of loneliness and isolation. Thus, participants relied on the support of others who had experienced concussion to help them understand their injury and cope with it. Findings suggest that concussion recovery is challenging, and perception of this experience is influenced by the existent sport culture.
Emotional experience of concussion is an important consideration in both concussion recovery and treatment at all levels of sport.
Lay Summary

Men and women student-athletes were interviewed to gain understanding of how they perceived and managed the emotional experience of concussions in varsity sport. The findings indicated that they were coping with many stressors during their concussion experience, including limitations in all areas of their lives, as well as the time at which their injury occurred and how this was a source of stress. Additionally, they experienced pressure to play through pain and injury, describing how this is normalized in sport and a perceived part of their role as athletes. In managing the emotional experience, they used forms of distraction to redirect their attention to other things in their lives and support from others who had experienced concussion to help them better understand it. Findings demonstrate that concussion is challenging, however by having other things outside of sport and support of people who understand the injury it is manageable.
Preface

This research was approved by the University of British Columbia’s Behavioural Research Ethics Board (H16-03399). A version of this work will be submitted for publication. I conceptualized, designed and carried out this research with the support of my supervisor, Dr. Peter Crocker. I was responsible for developing the research questions, participant recruitment, data collection/interviews, transcription, analysis and thesis preparation. Dr. Peter Crocker, Dr. Andrea Bundon and Dr. Michael Koehle are co-authors on this thesis. The co-authors provided guidance, comments and feedback on the study design, literature review, data interpretation and final thesis preparation.
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Chapter 1: Introduction

In January of 2013, Colorado Avalanche captain Gabriel Landeskog sustained a concussion in a game against the San Jose Sharks. The National Hockey League season had been shortened by a lockout and Landeskog was in the midst of his debut as the youngest captain in the franchise history. Feeling inevitable pressure to perform, he finished the game despite being concussed and experiencing a period of blackout immediately after the hit to the head he suffered. He described the following days feeling like he had a “headache right behind my eyelids” (para. 25) and as if “two cement blocks were pushing against the sides of my skull.” (para. 22). He depicted his mental anguish as dangerous cycle, as it was difficult to help others understand the pain he was feeling, all while harbouring a fear of letting teammates down.

Looking back on the incident and reflecting on his experience, 23-year-old Landeskog asked for understanding from his fellow players:

“Unlike broken bones, concussions are invisible, and that means that everyone in the hockey community needs to unite and redefine what we mean by toughness and warrior mentality. If we continue to keep quiet, it’s sending the message that taking time to recover is not right, or that it’s a sign of weakness. We have to stand up and speak up.” (Landeskog, 2016, para. 49).

1.1 Sport-related concussion

A concussion is “a brain injury and is defined as a complex pathophysiological process affecting the brain, induced by biomechanical forces” (McCrory et al., 2013, p. 1). In sport, a concussion can be caused by a direct or indirect blow to the head, face, neck or other areas of the body where force is transmitted to the head. Typically, when athletes experience a concussion, there is a quick onset of short-lived neurological impairment. In some cases, however, signs and
symptoms tend to evolve from minutes to hours or symptoms can be prolonged (McCrory et al., 2017).

The most consistent predictor of recovery time is the severity of the initial symptoms in the first 24 to 72 hours. If an athlete has mild symptoms the first day after injury, they are more likely to recover quickly (McCrory et al., 2017). Symptoms affect athletes physically, psychologically, somatically (in the form of mild to chronic headaches) and emotionally. The five most common symptoms of concussion stated within the literature in the context of sport are amnesia, confusion/disorientation, a sensitivity to light, severe headaches and sleep issues (King, Brughelli, Hume, and Gissane, 2014). Psychological and emotional consequences include memory difficulties, irritability, sadness, depression, anxiety and feeling “foggy” (King et al., 2014; McCrory et al., 2013). After the first concussion, symptoms are often more severe for each subsequent concussion, which results in longer recovery time (Elbin, Covassin, Henry, Whalen, Wedge, and Kontos, 2013).

Athletes often demonstrate a “lowered protective threshold” (p. 426), meaning that they are especially vulnerable to another concussion after the first. The cited 7-10 day period of recovery after a concussive injury is also a window for increased susceptibility, as return to play during this period of time exposes athletes to a high chance of experiencing another concussion, especially if all symptoms have not fully resolved (Elbin et al., 2013; Taylor & Blackwell, 2016).

It is important to note that symptoms do not always occur right away following injury, thus monitoring of symptoms by team doctors is of the utmost importance (Guskiewicz et al., 2013). Overall recovery time and severity of symptoms increases as athletes sustain more concussions, and with increased severity of symptoms comes more cognitive difficulty, which leads to
questions about the emotional experience and an athlete’s ability to cope with this (Elbin et al., 2013).

Not all concussions, initial or repeat, have been documented to-date, as athletes have often admitted to playing through a suspected concussion due to pressure from coaches and lack of awareness (King et al., 2014; Kroshus, Garnett, Hawrilenko, Baugh & Calzo, 2015). Additionally, the social norms of sport, specifically a “no pain, no gain” assumption and a fear of being viewed as weak as well as letting down teammates, impacts an athlete’s decision to ignore or play through concussion (Weise-Bjornstal, Smith, Shaffer & Morrey, 1998). The notion of playing through pain has often been associated with masculine norms in sport and living up to this ideal (Spencer, 2012). The norms of femininity in sport have often been associated with being gentle and emotional, assuming that women athletes are much weaker than their male counterparts (Krane, 2001). Though women athletes report more concussions, as well as more symptoms, this reporting may be due to the limiting social norms of masculinity and femininity (Covassin, Elbin, Crutcher, & Burkhart, 2013b; King et al., 2014; McCrory et al., 2013). It is important to consider both psychological and sociocultural factors in sport as they have potential to play key roles in concussion prevention strategies (McCrory et al., 2017).

1.2 Gender and concussions

Though gender has been stated as a potential “risk factor” for concussion in sport, very few studies on concussion have included women athletes (McCrory et al., 2013). To explore gender in a qualitative study examining emotional experience, sociological views of the norms of masculinity and femininity should be acknowledged and considered. These norms have often been applied to sport injury, acknowledging the notion that men are supposed be “tough” and women “soft” (Krane, 2001; Spencer, 2012). It has been assumed based on these norms that
women cannot participate in sport because they are not strong enough physically, but as more women begin to participate in predominantly male high-contact sports such as rugby and ice hockey, sport is no longer a primarily masculine part of society. As a result of this change, women athletes have reported denying pain and downplaying severity of injury to avoid looking weak in sport, adopting what has been viewed as primarily masculine norms in sport (Young & White, 1995). The norms of masculinity and femininity should be considered in an exploration of emotional experience to further understand the potential for any differences or similarities beyond the symptoms experienced. In examining this emotional experience, an understanding of these norms and how they might impact how athletes evaluate and cope could help to further understanding around concussion experience.

1.3 Coping with concussion

Concussion in sport has been associated with an emotional and adaptational struggle (Mainwaring, Hutchison, Camper & Richards, 2012). When exploring how individuals cope with specific experiences, their appraisal of the person-environment relationship influences the emotions and cognitions that will be experienced which, in turn, impacts coping (Lazarus, 1991). Emotions in a situation can occur without the presence of coping efforts but they cannot occur without some form of cognitive appraisal, as it determines if the situation is threatening or potentially benefitting the goals of the athlete. The uniqueness of concussion to the individual and how threatening athletes appraise its impact on their own personal goals and well-being determines how they might cope (Lazarus, 1991). Coping is a cognitive or behavioural response a situation appraised as stressful. Efforts of coping attempt to change, minimize, avoid, tolerate or accept the situation in order to manage the demands of it (Lazarus, 1999; Lazarus & Folkman, 1984). When athletes are faced with situations that are threatening and uncontrollable, such as a
Sport-related injury, emotion-regulation coping is a common strategy utilized, as the feelings of loss associated with the injury elicit many emotions from athletes (Lazarus & Folkman, 1984). In the context of sport-related concussion, it is unknown if the cognitive appraisal of the injury influences how an athlete copes with this injury (Weise-Bjornstal, White, Russell & Smith, 2015).

Social support is a commonly utilized to aid recovery and return to sport (Mosewich, Crocker & Kowalski, 2013). Reliance on the support from family, friends and teammates is common to help overcome the difficulty of sport injury recovery, with athletes citing it to be important in the physical, emotional and psychological recovery. When explored in the context of sport-related concussion, athletes have often reported feelings of dissatisfaction with the social support they received from all sources (Weise-Bjornstal et al., 2015). The invisible nature of concussions, lacking any physical indicators of injury, can create coping difficulties when those around them do not understand that the injury affects athletes psychologically and emotionally.

In addition to social support, avoidance coping is a common way to manage concussion and the emotions associated with it. This coping mechanism is common in situations that are appraised as uncontrollable and is often utilized due to the lack of clarity in recovery time (Covassin, Crutcher, Bleecker, Heiden, Dailey & Yang, 2014). Though specific emotions associated with concussion are known (King et al., 2014; McCrory et al., 2013), the individual experience of these emotions and how athletes appraise and cope with them is not well understood.

1.4 Purpose and research questions

Research to date has shown that concussions in sport affect athletes physically, psychologically, somatically and emotionally (McCrory et al., 2013). The psychological and
emotional experiences have often been neglected, due to their invisible nature, warranting further examination into this as it is of equal importance in the overall understanding of the injury (King et al., 2014). It is known that concussions have been associated with an emotional and adaptational struggle, and it has yet to be examined how athletes cope with this difficulty, specifically in the context of Canadian varsity sport (Mainwaring, 2012). In addition, it is also known that athletes are more susceptible to another concussion after the first, and they are often accompanied by more severe symptoms and longer recovery time. With this increased severity of symptoms, comes cognitive difficulty, and how athletes cope with this emotional experience that is associated with concussions is unknown (Elbin et al., 2013). Injury is one of the most commonly cited setbacks in sport, and the ability to overcome the psychological and emotional difficulties of an injury is dependent on an ability to cope (Lazarus & Folkman, 1984; Mosewich et al., 2013). Additionally, the way in which an athlete copes with the injury depends on how they appraise the injury (Lazarus, 1991). A further understanding of appraisal and coping with concussion would be beneficial to understand how they potentially relate to one another in the context of this injury specifically (Kontos Elbin, Appaneal, Covassin & Collins, 2013). In relation to appraisal and coping, mixed consensus on gender differences or similarities in coping with injury in sport warrants a further examination.

Thus, the purpose of the current study was to: explore emotional experiences of men and women Canadian student-athletes who have had sport-related concussions; and to examine appraisal and coping responses to this experience. The current study will address the following research questions:

1. How do Canadian student-athletes appraise and cope with the emotional experience of concussion?
2. Are there differences in the ways women and men student-athletes report the emotional experiences (and related appraisals and coping) associated with concussion?
Chapter 2: Literature Review

2.1 Sport-related Concussion

Barth and colleagues (1989) published one of the first articles about neurological sequelae and recovery of function as a result of mild head injury that concluded athletes experienced cognitive difficulties with the injury. Within their research, they cite the earliest known research conducted around concussion. Stemming back to 1928, Martland’s study was titled “Punch Drunk” in reference to the term used to describe professional boxers who had sustained blows to the head in a match and appeared physically unsteady on their feet, stumbling around the boxing ring. The neurological effect of head injury was characterized by mild confusion and also a severe and progressive mental decline that may “necessitate commitment to an asylum” (p. 1103). A physically unsteady gait and increased speech and motor issues were also present, with some boxers exhibiting movements very similar to that of patients being treated for Parkinson Disease. At this time, a concussion was referred to as being “Punch Drunk”, and was not taken seriously, but Martland (1928) called for more attention to the condition, stating that it can no longer be ignored by medical practitioners or the general public due to the understanding that head injuries are a serious health issue. The further effects of the injury were unknown and unstudied but as research grew over time, more researchers began focusing on other sports such as American football and ice hockey.

Barth et al.’s (1989) article exemplified significant growth from the beginning of research on head injury in sport, now referring to the condition as mild head injury. It solidified the existence of a neuropsychological impact of concussion in sport, citing empirical evidence of amnesia and personality changes in athletes who experienced mild head injury. A connection between subconcussive injury and further neuropsychological decline was established, with
evidence of more concussions resulting in potentially irreversible psychological effects. Barth et al. (1989) created significant interest within the area of neuropsychological symptomology surrounding concussion, as their paper was one of the first to summarize results of previous studies around concussion in sport and conclude that it was a problem that required further attention. Additionally, it called for the development of neuropsychological assessment tools to monitor recovery of function following concussion to guide return to play decisions. By establishing the importance of consideration of the neuropsychological impact of concussion, Barth et al. (1989) provided a basis for research to further examine this aspect of concussion.

Collins et al. (1999) published one of the most significant studies examining neuropsychological aspects of concussion that followed Barth et al.’s (1989) research. They examined the relationship between concussion history and learning disability, and their relationship with neuropsychological performance postconcussion in college football players. Results indicated that a history of concussion and the presence of a learning disability was associated with a reduced cognitive performance. Also, a history of concussion was associated with long-term deficits in overall executive functioning, speed of information processing and an increase in self-reported symptoms. Thus, athletes with a history of two or more concussions experience various issues with cognitive skills. This impairment affects academic success, as cognitive domains are essential to maintain an ability to study and process information in a school setting. The study highlighted the importance of neuropsychological assessment, as athletes who have a history of multiple concussions exhibit reduced cognitive performance (Collins et al., 1999). The results of this study exposed researchers to the neuropsychological symptoms of concussion, which was the beginning of research in the area of psychological aspects of concussion. Identifying that concussion is closely associated with potential
impairment of cognitive functioning, the study raised many questions about the emotional experience that comes with these psychological struggles, and how athletes navigate through them.

Concussion symptoms affect individuals across various domains, including physical, psychological, somatic and emotional. The five most common symptoms associated with a concussion are amnesia, confusion/disorientation, sensitivity to light, severe headaches and sleep issues (King et al., 2014; McCrory et al., 2013). However, knowledge of a specific athlete’s concussion symptomology is dependent on the athlete honestly and accurately reporting them (King et al., 2014). Since the injury is referred to as a “silent injury” and often cannot be detected physically, reliance on physical appearance is not sufficient. Some cases report delayed, varying symptoms, which can cause confusion and lack of consensus about whether or not a concussion has been sustained (Guskiewicz et al., 2013). Though there are physical symptoms of concussion, they do not manifest like other athletic injuries and often go unnoticed (King et al., 2014).

A loss of consciousness is not required, nor is it always consistent, with sustaining a concussion, as individuals can remain completely conscious during the event. A concussion can occur as a result of direct or indirect contact to the head, as the forces from the impact can travel throughout the body to the brain. The impairment of neurological function is normally short-lived, and athletes recover relatively quickly, as 80-90% of concussions resolve within a 7 to 10-day period (McCrory et al., 2013). When considering a return to play, it should be individualized to each player who suffers the injury, utilizing symptom assessment and various cognitive examinations to track recovery progress (King et al., 2014). When an athlete returns too early before symptoms have fully resolved, they are at an increased risk for sustaining a second
concentration (Elbin et al., 2013). It has been previously recommended that athletes rest until they are symptom-free and abstain from any activity. This approach has recently been challenged as it is now recommended that during the acute phase of 24-48 hours post-concussion athletes are to rest. Once they are no longer experiencing symptoms when resting, they can begin slowly return to an active lifestyle while ensuring their activity does not bring on or worsen any symptoms they may have. If they become symptomatic again, it is recommended that they return to rest for 24 hours. (McCrory et al., 2017). DiFazio et al. (2015) do not recommend complete withdraw from sport as it can contribute to deterioration of mood, an increased sense of vulnerability, behaviours of avoidance and anxiety.

The individuality of concussion has been addressed throughout academia, as interest in the injury has become more widespread. Collins, Echemendia and Lovell (2004) stated that guidelines for concussion “provide useful diagnosis of concussive injury, but are not specific enough to be useful in making individualized return to play decisions” (p. 115). Unlike other common sport-related injuries, concussions are unique to the individual and should be managed as such (King et al., 2014). Set, stepwise approaches that suggest to manage the injury the same for all cases are inaccurate and ineffective; each case must be treated as a new, individual case that is different from the other. Athlete medical history, previous incidence of concussion and underlying psychological conditions must all be considered when working with concussed athletes, as different return to play criteria may be required for individuals with pre-existing medical or mental health diagnoses. Additionally, symptoms and impairment from concussion can cause the athlete to perform differently on select movements required to return to sport. One could perform well on an aerobic exercise but not as well on a cognitive test. Thus, current research supports Collins et al (2004)’s assertion that concussion is unique to the individual and
should be managed on a case-by-case basis (Kontos and Reynolds, 2015). Current neuropsychological concussion assessment tools take this in to consideration, as they often establish an individual athlete baseline to help guide return to play decisions and track progress over time. By comparing post-injury neurocognitive testing results to individual athlete baseline, it creates a more accurate and individualized approach to guide these crucial decisions (Collins et al., 2004; Escalona, Esfandiari, Broshek and Freeman, 2015). Considering the importance of individualized assessment and treatment, an understanding of athlete emotional experience with concussion and how they cope with it could help to guide clinical understanding of the injury to avoid premature return to sport.

Models of individualized concussion assessment that are most commonly recognized in the literature are the Sport Concussion Assessment Tool (SCAT) and ImPACT (Immediate Post-Concussion Assessment and Cognitive Test). SCAT, now on its third version called SCAT5, consists of eight components to be measured upon occurrence of a suspected concussion. These components include Glasgow Coma Score to measure severity of the head injury, the Maddocks score for initial sideline diagnosis of concussion, cognitive and physical evaluation, and a symptomology score which includes number and severity of symptoms. A total score of 100 is calculated at the end of the test, and not all scores from all components are included in the final count. The SCAT is meant for medical professionals to utilize to assess concussed athletes, and even if the scores calculated are “normal”, an athlete may still have a concussion and further evaluation is recommended (Guskiewicz et al., 2013; Concussion in Sport Group, 2013; McCrory et al., 2017). The Immediate Post-Concussion Assessment and Cognitive Test (ImPACT) was created as a response for the need to consider not only neuropsychological symptoms, but also the importance of clinical interview skills and demographic/history data in
accurately assessing a concussive injury individually. This computer-based test is administered to establish a baseline of neurocognitive functioning for an athlete either pre or post-injury. Oftentimes, the baseline test (if not conducted prior to injury) is completed immediately after the suspected concussion and is done in an attempt to define the severity of the concussion. A second ImPACT is administered within 72 hours post-injury to maintain close monitoring of the injury. The follow-up tests are done at regular intervals, often 5 days and 10 days, to determine any curves of recovery and to keep a consistency in the measurement of any potential changes. It measures multiple aspects of cognitive function, including attention span, working memory, sustained and selective attention, response variability and verbal/visual memory. Reaction time is measured through a series of 10 modules, and a 21-item symptom self-reporting scale and a demographic form are also included, to assess the individual aspects of the injury. It takes approximately 20 minutes to complete, and can be done individually or within groups. The purpose of this test is to help inform return to play decisions and post-concussion management recommendations. In return to play decisions, self-reported symptoms and neurocognitive data are given equal consideration (Collins et al., 2004). These measures depend greatly on the honesty of the athlete to report all symptoms.

Approximately 50% of concussions still remain under-reported. Athletes from a range of sports and various levels of competition admit to playing while experiencing symptoms of a possible concussion (Kroshus et al., 2015). Athletes oftentimes omit symptoms or do not report the injury for fear of being removed from their sport permanently or being viewed as “weak” and letting their teammates down (Weise-Bjornstal et al., 1998). Underreporting can also be due to lack of knowledge and clarity surrounding concussion recovery and treatment. Coaches have also demonstrated a lack of understanding of concussion, stating they would not remove a
concussed player from a game, and would allow athletes to return to play if still symptomatic. This encourages the sociological view of playing through pain and injury (King et al., 2014). These sociological views of sport injury are important in understanding both cognitive appraisal and emotional response associated with sport injury, as the culture of sport is one that encourages ignoring injury and playing through pain (Weise-Bjornstal et al., 1998). By acknowledging athlete response to concussion in relation to this sociological norms and considerations, it can help to guide understanding of the role that emotion and coping play in concussion recovery.

Gender is a risk factor and there is a cited significant group difference between men and women. Rates of concussion are significantly higher, more symptoms are experienced by female athletes and recovery rates are longer (Covassin et al., 2013b; King et al., 2014; McCrory et al., 2013). Potential reasons for this discrepancy are that women have weaker neck muscles than men and experience greater displacement following an externally applied head force (Covassin et al., 2013b). Tierney, Sitler, Swanik, Swanik, Higgins, & Torg (2005) examined gender differences in concussion, looking at specific differences in head and neck between men and women, and how they responded to external force application with neck muscle preactivation and without. The study found that women experienced a greater head-neck segment peak angular acceleration and displacement than men even when engaging in muscle activity just prior, supporting that women are at a greater risk for concussion when greater force is applied to the head (Tierney et al., 2005). Men and women also differ in brain structure and function, which contributes to variations in neurocognitive function after a concussive injury. Women exhibit better performance on verbal memory and perceptual motor speed, whereas men perform better in visual-spatial task, mental rotation, and quantitative problem solving. The differences...
exhibited could be the reason for differences in concussion symptoms and neurocognitive performance post-concussion (Covassin et al., 2013b).

Studies on the effect of gender on symptoms of sport-related concussion have concluded mixed results. Some conclude that symptoms as opposed to neurocognitive scores are the reason for any observed gender differences. The concept of social biases has also been suggested as a potential reason for differences, stating that men may deny or minimize their symptoms for fear of being removed from their sport, whereas women show more concern for their future health, hence why they report symptomology more accurately (Zuckerman, Apple, Odom, Lee, Solomon and Sills, 2014). Individual symptoms have also been found to have little variation when examined between genders in a study by Zuckerman et al. (2014). Women reported higher levels of sleeping less than usual at baseline than their male counterparts, but there were no differences in other symptoms exhibited as a result of concussion. A longer recovery period (~2.1 days average) was experienced by female athletes, suggesting that even if there is very limited differences in symptoms, women do take longer to recover. Collegiate athletes made up only 7% of the 244 athlete sample, thus, it may not generalize to the varsity athletic context. To further understand the potential reasons for any gender differences or similarities, consideration of the individual experiences of men and women athletes should be considered. By examining their appraisal and perceptions of the injury as opposed to just the symptoms they experience, it can help to build a story around each individual athlete and further understand how the injury is for them overall. Consideration of the social context that men and women athletes are situated within can also help to understand reasons for these potential differences, as the norms of sport and roles that men and women athletes play in society may be a plausible explanation for any limitations or advantages.
It is accepted in literature that a relationship does exist between concussions and depression. Athletes are believed to be at a higher risk for depression than the general population, potentially due to sport-related risk factors such as involuntary career termination, high expectations for performance and possible overtraining (Wolanin, Gross & Hong, 2015). As athletes experience injuries often and endure pain, they may be at a higher risk for short-term depressive symptoms as a result of these experiences (Yang, Peek-Asa, Corlette, Cheng, Foster & Albright, 2007). Most of the depressive symptoms that athletes report are possibly due to the specific athletic stressors they experience in their sport. However, insufficient evidence exists that depression is a modifying factor for concussion assessment and management as it is possible that symptoms reported as not that of depression (Solomon, Kuhn, & Zuckerman, 2016).

2.1.1 Multiple Concussions

The literature often claims that “once an athlete gets a concussion it’s easier to get another one” due to increased susceptibility and vulnerable following initial injury (Elbin et al., 2013, p. 426). Evidence for this statement explains that a history of previous concussion predisposes an athlete to more severe ones in the future. Further, the management of concussion is important in ensuring that an athlete fully recovers from the injury before a return to play, as a premature return can increase susceptibility to another concussion. After the initial concussive injury, athletes endure what is known as a “lowered protective threshold”, where their tolerance for future concussive injury is lowered. This means that they are exceptionally more vulnerable for future concussions which are more severe in nature (Elbin et al., 2013). The first seven to ten days’ post injury are crucial for the increased chance of sustaining another concussion (Elbin et al., 2013; Taylor and Blackwell, 2016). If the athlete sustains another concussion within a short
period of time (i.e. 2-3 per year; 2+ per playing season), it is likely that the first one did not fully resolve and withdrawal from sport should be seriously considered (Elbin et al., 2013). A focus on the length of the recovery is also important when dealing with concussion (Elbin et al., 2013) as postconcussion symptoms can last for months post injury, and each incident of concussion must be managed individually to best avoid the risk of sustaining another due to premature return (Scolaro Moser, Schatz and Jordan, 2005). If an athlete begins suffering concussions from less force during play for example, then withdrawal from sport should be considered as the athlete is likely to suffer the long-term effects from repeated injuries. Repeat concussions are associated with brain function decline over the long-term, specifically impairments in immediate and delayed memory, attention, concentration, processing speed, and cognitive flexibility. As an athlete sustains more concussions, the severity and number of symptoms increase, as well as the overall recovery time. Though an athlete meets return to play criteria, they may still be experiencing symptoms of the injury and in this case, they must be withheld from playing. Though there is no set of guidelines for such situations, this is not to say the monitoring and management of concussion is not important (Elbin et al., 2013).

Scolaro Moser et al. (2005) examined prolonged effects of concussion in high school athletes, comparing four groups: no concussion history, recently concussed, history of one concussion, and history of two or more concussions. The more exposure that high school athletes had to contact sports, the more at-risk they were for chronic traumatic brain injury (TBI), as they were more likely to sustain multiple concussions that are progressively worse. Athletes who had multiple concussions had a significantly lower grade point average (GPA) than those who had not concussion history or one or less, indicating that the effects of the injury can impact general academic performance greatly. Youth who sustained multiple concussions experienced issues
with attention and processing speed long after their concussive incident. The impact of these two deficits is similar to those who had recently suffered concussion, suggesting that damage from the injury is long-lasting and possibly permanent. Even if an athlete was healthy before the concussive incident, long-term effects are still possible (Scolaro Moser et al., 2005).

Consistent with the notion of brain function decline and delayed recovery time is the term postconcussion syndrome (PCS). Classified by a group of non-specific symptoms reported following the incidence of concussion or mild traumatic brain injury (mTBI), PCS associated symptoms persist beyond the expected recovery period. When an individual does not recover within the 7-10 day window, the lingering symptoms are often attributed to PCS (Broshek, De Marco and Freeman, 2015). Persistent headache, an inability to concentrate, irritability, fatigue, vertigo, disturbances in gait, sleep and vision, depression and anxiety, and emotional liability are symptoms of this disorder (Putukian and Echemendia, 2003; Broshek et al., 2015). The symptoms are very similar to other conditions, such as depression, so it cannot be assumed immediately that they are from PCS (Broshek et al., 2015).

Broshek et al. (2015) identified four predictors of post-concussion syndrome: pre-injury existent depression or anxiety, coping style, psychological distress, and anxiety sensitivity. Pre-existing depression or anxiety before the injury can predict post-concussive symptoms at three months post-injury. This supports the importance of recording any pre-existing conditions in concussion assessment. Coping style contributes to the perception of post-concussive symptoms specifically in children. Emotion-focused coping has been found to be positively associated with symptom reporting, whereas problem-focused is negatively associated meaning that symptoms are often not reported when problem-focused strategies are utilized. Psychological distress was found to negatively influence performance on computerized neurocognitive tests, which further
proves how emotional distress can heavily influence recovery. Post-concussion symptoms were found to be associated with anxiety sensitivity, the fearful response associated with bodily sensations that come from the belief that they are a sign of harmful consequences to come. Heightened levels of anxiety sensitivity can contribute how individuals with concussion perceive their injuries overall (Broshak at al., 2015).

The effects of repeat concussions can be permanent (Elbin et al., 2013; King et al., 2014), and in the context of professional football, retired players with a history of three or more concussions have been found to have severe difficulties meeting the physical and mental demands that come with life after football (Fainaru-Wada and Fainaru, 2013). One of the most commonly cited psychological disturbances for athletes after concussion is depression. Guskiewicz et al. (2007) investigated the association between head injury and the possibility of being diagnosed with clinical depression amongst retired professional football players whom had prior concussions during the course of their careers. They found that professional football players who yielded a history of three or more concussions were at a notably greater risk for experiencing depressive incidents later in their lives compared to those players who had no history of concussion. Physical limitations were associated with a history of concussion and depressive episodes in this sample, as those who experienced depression cited an interference in their day-to-day physical activities compared to those without depression (Guskiewicz et al., 2007). This leaves questions about other athletes who sustain multiple concussions from other sports – do they experience emotional difficulties similar to depression after their concussions? Additionally, is depression related to concussion consistent in a sample of varsity athletes?

In a study evaluating psychological outcomes from sport concussions, Mrázik et al. (2016) found the most problematic psychological outcome for youth hockey players with a
history of concussion to be worry for their physical self, specifically focusing on their somatic or bodily symptoms. Even after players had been medically cleared to return to play, they still felt significant worry for their physical self. Common psychological issues identified by participants were atypical behaviours (i.e. isolation, unusual thoughts and perceptions), locus of control (i.e. perception of control over outer events), anxiety (i.e. general fear and nervousness), traditional symptoms of depression (i.e. sadness, loneliness, and lower enjoyment of life), sense of inadequacy in academic endeavours, and attentional difficulties (i.e. inattentiveness and distractibility). These psychological symptoms persisted for the youth with a history of concussions, even when they were deemed healthy by medical staff (Mrazik et al., 2016). This raises many questions about concussions in sport and how athletes in the Canadian varsity sport context cope with symptoms, especially if they do persist, and if these symptoms are accompanied by emotions.

2.2 Coping and Emotion

“We don’t become emotional about unimportant things, but about values and goals to which we have made a strong commitment.” (Lazarus, 1991, p. 819).

Richard Lazarus, a psychologist and leading researcher in the area of stress, coping and emotion, speaks to the notion of appraisal in his research and the important role it plays in the emotions individuals’ experience. Lazarus’ (1991) cognitive-motivational-relational-theory (CMRT) of emotion proposes that cognitive appraisals determine which emotions an individual will experience in an environment. Within this theory, Lazarus (1991) identified fifteen core emotions, both positive and negative: anger, anxiety, fright, guilt, shame, sadness, envy, jealousy, happiness, pride, relief, hope, love, gratitude and compassion. These emotions are part of the relationship between an individual and the environment they are situated within. In this
environment, individuals appraise how it relates to their goals. Appraisals are classified as primary and secondary, combining to influence the intensity of the emotion and which type they experience.

This CMRT of emotion model speaks to the individuality of appraisal, coping and emotion. In this context, “relational” addresses how psychological stress and emotion is generated by the person-environment relationships that change with time and circumstances of the situation. “Motivational” alludes to how emotions are a reaction to the encounter in terms of how it is personally relevant to an individual’s goals. The type and strength of the emotion experienced will be affected by an individual’s motivation to achieve their goal and what personal meaning it holds for them. The “cognitive” in this model is the notion that cognitive appraisal occurs in a person-environment relationship, which impacts what emotions are experienced (Lazarus, 1991). It is clear that appraisal plays a significant role in what emotions are experienced, but it is equally as important to have coping resources to manage such emotions.

Emotions can be evoked without the presence of coping efforts but they cannot occur without an appraisal of the person-environment relationship, as appraisal determines if the environment is threatening (or potentially benefiting) the goals and well-being of an individual. Emotions are about an evaluation of the person-environment relationship in select situations. This evaluation involves harm, which can elicit negative emotions, and benefits, which can produce positive emotions (Lazarus, 1991). Lazarus (1991) advises that there are two components of appraisal, primary and secondary. Primary appraisal addresses what is at stake in an encounter and situates that without any stake, there is no emotion. This relates to the notion that if an individual’s goals are not threatened by the person-environment relationship, they will
experience positive emotions, as the situation is appraised to be beneficial (Lazarus, 1991). There are three types of primary appraisals: goal relevance, which examines if there is potential for harm, loss or threat; goal congruence, examining if the encounter is harmful or beneficial; and goal content, which kind of goal is at stake. Following the primary appraisal considerations, secondary appraisal assesses what can be done, and what options or prospects for coping the individual can engage in. Three types of secondary appraisal occur: blame or credit, where it is determined if there is accountability or responsibility and how much control is had; coping potential, how the person-environment relationship, if at all, can be influenced for the better of the individual; and future expectations, what the individual thinks will happen as a result of coping (Lazarus, 1991).

Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). According to this definition, it is process-oriented, meaning that efforts must adapt to the changing demands of the environment. Coping in this context is also anything that the individual does or thinks in a select situation, as it is an effort to manage, not a measure of how much the mechanism does or does not work. Additionally, it is associated with managing a situation, which can include minimizing, avoiding, tolerating or accepting the conditions of stress and an overall attempt to master this environment (Lazarus and Folkman, 1984; Lazarus, 1999). It is important to understand that coping is an essential part of the emotion process and the ability to successfully manage emotions is dependent upon one’s ability to cope.

While there is not a universally accepted definition of emotion, Lazarus (2000) stated, “each discrete emotion is said to tell a different story about a person’s adaptational struggle” (p.
Emotions occur when the environment is threatening to the individual’s goal and several of them can occur over the course of one single encounter depending upon the appraisal of the environment. How an individual appraises a situation can influence emotions experienced, as it examines the personal implication of the interaction and what this means for their well-being (Lazarus, 2000). To understanding emotions, an understanding of the environment as it aligns with the well-being and goals of the individual is required.

When an environment is appraised as threatening to the goals or well-being of an individual, strategies to cope are considered. Two general higher order dimensions of coping are emotion-focused, and problem-focused. Strategies to regulate the process of emotions are included under the realm of emotion-focused (Lazarus & Folkman, 1984). Seeking out emotional support, relaxation or meditation and wishful thinking are all examples of this strategy of coping (Crocker et al., 2015). Problem-focused coping encompasses cognitive and behavioural attempts to change the demands of the environment or actions of the self (Lazarus & Folkman, 1984). An awareness of cues, concentrating on goals, time management and training are all problem-focused coping strategies (Crocker et al., 2015). When control is had over a situation, problem-focused coping strategies are often utilized. In contrast, when a situation is uncontrollable, emotion-focused coping is often consulted, as this feeling of loss of control elicits many emotions (Lazarus & Folkman, 1984). Additionally, problem-focused coping specifically has been found to foretell positive affect, and emotion-focused has been known to predict negative affect (Ntoumanis, Biddle & Haddock, 1999). While minimal research has examined coping with concussion in sport the context, in the general concussion population active coping patterns (i.e. emotion-focused, problem-focused) predicted a better quality of life for individuals with mild traumatic brain injury. Patterns of passive coping, known as ignoring or avoidant coping, have
been associated with higher levels of subjective complaints (ex. fear, depression, sleep difficulties, and cognitive difficulties) in concussed individuals (Wiese-Bjornstal, White, Russell & Smith, 2015). With this knowledge in mind, it can be suggested that active coping patterns are best for coping with concussion as they result in more positive outcomes. With limited research in the area of emotions associated with concussion and how athletes cope with them in the sport context, this assumption cannot be proven.

Cognitive appraisal of concussion has been only scarcely researched in literature. Wiese-Bjornstal et al. (2015) introduced the Conceptual Model of Psychological Response to sport concussions and describe a number of factors that influence the process of cognitive appraisal, emotional responses and behavioural responses to sport concussion. Personal factors (i.e. injury characteristics, individual differences) and situational factors (i.e. sport, social, and environmental influences) impact how an athlete will appraise their injury and this then influences the emotional response to the concussion. These emotions that are elicited in response to concussion then affect behaviours. The cognitive appraisal, emotional and behavioural responses all affect recovery outcomes collectively through rehabilitation and return to sport after concussion. An athlete’s cognitive appraisal of their concussion can influence other psychological responses to the injury. For example, severe fatigue is often a symptom reported by concussed individuals, and this results in a compromise of cognitive functioning as well as appraisal which can influence emotional symptoms and responses. The slippage of cognitive functioning also produces heightened anxiety, which can interfere with information processing in concussed athletes. This form of dysfunctional feedback is more severe when depressive symptoms, sleep disturbances and various forms of pain (i.e. physical, emotional) are experienced. Cognitive appraisal in this state becomes challenging for athletes, as their overall
cognitive functioning is compromised. Additionally, negative appraisal of injury is a strong predictor of the development of postconcussion syndrome, along with the coping response to the injury at this time (Weise-Bjornstal et al., 2015). In these states, coping is important to manage the difficulties experienced. Athletes’ appraisals of their concussion are important in understanding if and how these appraisals relate to their ability to cope with the injury (Kontos et al., 2013). Athletes’ cognitive appraisal of concussion is an area that is under researched and would be beneficial to further understanding of the experiences of the invisible, psychological symptoms of the injury and how best to cope with them.

2.2.1 Gender and sex differences in coping

Gender is a socially produced distinction which is based on sex differences (Spencer, 2012). Research within stress, coping and emotion in the sport context has heavily debated the topic of gender and sex differences when coping with sport-related stressors. There are two predominant hypotheses that encompass why these differences may or may not exist, namely the dispositional hypothesis and the situational hypothesis. Men and women have characteristic differences that are reflected in their coping choices, regardless of whether these differences are innate to the individual or learned. This notion is referred to as the dispositional hypothesis. It suggests that these differences reside in sex itself, not the environment within which the individual is situated. Conversely, the situational hypothesis affirms that it is situations that drive coping behaviours, and that sex differences are owed less to personality differences and more so to the roles that men and woman play in society, as well as the various stressors they face within it (Tamres, Janicki, & Helgeson, 2002). These two hypotheses have been examined within the context of sport, examining how men and women athletes experience sport-related stress.
Hoar, Crocker, Holt, and Tamminen (2012) explored gender differences in the types of coping strategies adolescent athletes utilize to manage interpersonal stress related to their sport. Gender differences were evident only in specific coping strategies of seeking social support, aggression, and cognitive reappraisal. This provided partial support for the situational hypothesis, as the context within which the stressor occurs influenced gender differences in coping. The dispositional view was rejected, and gender differences still appeared to exist when stressor intensity was controlled for, so this aspect of the situational hypothesis was not supported. This study concluded that gender differences in adolescent athletes’ coping depends specifically on whether the interpersonal event can be effectively managed in a way that enables women athletes to achieve a close, balanced relationship and that allows men to demonstrate their status and personal success. Kaiseler, Polman and Nicholls (2012) found partial support for the dispositional hypothesis in their study investigating gender differences in appraisal and coping among men and women soccer players. Women soccer players reported use of more coping strategies, seeking more emotional social support and wishful thinking, therefore utilizing more emotion-focused coping. Additionally, they also utilized more problem-focused coping than men, using instrumental social support and active planning. These differences were found when controlling for stress intensity and control, which provides support for the dispositional hypothesis. These studies in the context of sport that elicit results supporting one of the hypotheses but not another exemplify how conflicting understandings surrounding gender differences in coping exists.

Potential gender differences are portrayed through various practices that work bodies in ways that attempt to indicate specific notions of masculinity and femininity. Masculinities are primarily associated with hardness, and in the context of sport, violence, toleration of pain and
denial of the long-term costs of playing in such a manner (Spencer, 2012). When injured, men athletes often play through pain, for fear of looking weak to teammates and coaches. They succumb to the pressure of looking “tough” and being a “man”. In a study by Caron, Bloom, Johnston & Sabiston (2013) looking at the effects of multiple concussions on retired National Hockey League players, participants reported playing through their concussions and pain for fear of looking weak and not living up to the masculine ideal. This is common with this injury and contributes to why there is a significant number of concussion incidents underreported (King et al., 2014). Notions of femininity in sport are associated with softness, with women expected to be “emotional, passive, dependent, maternal, compassionate, and gentle”, in order to align with these norms of hegemonic femininity (Krane, 2001, p. 117). Sport has been primarily viewed as being closely associated with masculinity, and due to its physical hazards, it is an “unfeminine” activity for women to engage in (Young & White, 1995).

In the context of the experience of sport injury as it relates masculine and feminine norms in sport, it is posited however, that sport is no longer primarily masculine part of society and it cannot be divided in these set masculine and feminine categories. Like men, women athletes often deny the pain of injury and suppress the emotional aspects of coping with injury pain. Women play through pain, make a mockery of it by denying and will downplay severity to avoid looking weak. Both men and women are willing to expose themselves to physical risk in sport, and women in particular have cited feeling confident and strong when participating in predominantly male sports (i.e. rugby, ice hockey). While it cannot be assumed that there will be differences in how men and women athletes experience their injuries, an understanding of any potential impact on coping and emotional experience should be further explored while considering these masculine and feminine norms.
In examining sport-related concussion, women athletes report more concussions and experience more prolonged symptoms than men, suggesting that gender is a known risk factor for sport-related concussion (Covassin et al., 2013b; King et al., 2014; McCrory et al., 2013). In a comparison of coping responses of concussed athletes with individuals suffering from orthopedic injury and a control group, Kontos et al. (2013) explored sex differences in coping following injury. Results found sex differences in the coping behaviours of men and women injured athletes, which was assumed to be due to the risk culture and masculinity complex present in sport. Appraisal was also considered, supporting Tamres et al. (2002)’s suggestion that sex differences can be due to stress appraisals and how women often appraise stressors as more threatening than men (Kontos et al., 2013). Research has found that when concussed, women place a higher priority on social support in the form of support groups and men rely more on individual coping (e.g. suppression of feelings) and strategies of problem-focused coping (e.g. reformulating problems).

It is clear that there is potential for differences in coping with injury to exist between the genders, and many of the studies that have explored this to date have approached it with quantitative methodology as opposed to qualitative. An approach of interviewing men and women athletes about coping with sport-related concussion could help to further examine this gap in the research, as interviews allow the researcher to further understand experience (Braun & Clarke, 2013). By exploring gender differences from an experience perspective, it could allow the participant to go in to more details about how they appraised the stressor and why they responded and coped the way they did. As appraisal is based on how the athlete views a specific situation as it relates to their goals and sport career, the consideration of the notion of femininity and physical force of sport being less mutually exclusive than masculinity and physicality will be
considered. It is important to understand this notion when exploring experience as it can have potential influence on athlete appraisal and how they experience concussion (Young & White, 1995).

2.2.3 Emotions associated with injury

Concussions are invisible injuries physically and psychologically which may lead to the mistaken assumption that athletes who suffer from these injuries do not experience psychosocial distress or emotional vulnerability (Mainwaring et al., 2012). Emotions tend to occur when people perceive significant changes in their lives to be positive or negative (Mainwaring, 2011). There is a predominantly negative emotional response to injury, experiencing common mood disturbances of shock, depression, anger, frustration, anxiety, boredom, reduced self-esteem, fear of reinjury, and uncertainty about future. Experiences of positive emotions occur when there is progress in rehabilitation followed by successful recovery (Mainwaring et al., 2012).

It is apparent that injury can be psychologically distressful for athletes; however, the emotional symptoms of concussion have only been briefly explored. Postconcussion emotional disturbance, which encompasses increases in fatigue, general emotional disturbance and decreases in vigor is supported by empirical evidence (Hutchison, Mainwaring, Comper, Richards & Bisschop, 2009). Frequent reports of depression, fatigue, irritability, confusion and general mood disturbance following concussion in sport have been found in quantitative studies with athletes (Mainwaring et al., 2012). With the importance of emotional experiences with concussion being unique to the individual, there is a gap to further explore these emotions qualitatively. Emotions cannot be generalized, rather each individual case of concussion needs to be looked at singularly, and qualitative interviews can help to achieve this goal (Hutchison et al., 2009).
Though emotional experiences with concussion are unique to the individual, depression is known to be “associated with the long-term cumulative trauma of multiple concussions” (Mainwaring et al., 2012, p. 265), indicating that those with a history of concussive injuries may be at significant risk for depressive diagnosis later in life. In a study of long-term consequences of sport concussion, Guskiewicz et al. (2007) found a relationship between prior history of concussion and depression within a group of retired professional football players. Specifically, those with a history of two or more concussions were 1.5 times more likely to be diagnosed with depression later in life than individuals with no history of concussion. Further, in the context of Canadian varsity sport, Mainwaring et al. (2004) had previously examined emotional reaction of varsity athletes to sport-related concussion. Though they found no differences in emotional state between concussed athletes, non-concussed athletes and a healthy control group, the overall emotional functioning of athletes declined significantly following concussion. Athletes who suffered concussions were more depressed and confused than non-injured athletes, signifying that the depressive state is in fact a result of the injury. When comparing to anterior cruciate ligament (ACL) injuries, changes in overall mood disturbance post-injury were present for the concussed athletes but not the ACL group. Significant increases in depression scores were also present (Mainwaring, Hutchison, Bisschop, Comper & Richards, 2010). It is clear that depression is a significant emotional response when concussed; however, it is also important to consider that several emotions can occur in one single encounter, as they can relate to the goals and outcomes of the athlete (Lazarus, 2000). It has been recommended that cognitive behavioural therapy can be beneficial to help athletes cope with persistent mood or behavioural issues they may have (McCrory et al., 2017).
Emotions are experienced when the person-environment interaction is related to the goals of the individual. They experience an emotional reaction when these goals are appraised as potentially threatened or harmed by the interaction (Lazarus, 1991). Athletes who compete at a highly competitive level are thus more likely to experience emotions by these standards. The perception of injury recovery and the severity of the injury impact emotions felt by injured athletes as well, and feelings of significant sense of loss when injured are common for competitive athletes, as their sense of self-identity involves their athletic abilities and performance (Putukian and Echemendia, 2003). Their appraisal of the severity and threat it poses to their well-being triggers an emotional reaction that can be devastating. Type of injury is important to consider when examining emotional reaction and recovery from sport injury to maintain as much consistency and relatability between the subjects as possible (Mainwaring et al., 2004). With this knowledge, and limited research within the area of coping with emotions associated with sport-related concussion, a study that examines emotional experiences associated with sport-related concussion on an individual basis, with a sample of athletes competing at the same level of sport, would be beneficial to begin moving forward in this area of research.

2.2.2 Coping with injury

Injury is one of the most common setbacks experienced in sport, and to overcome the emotional stress that comes with it requires an ability to cope effectively. Mosewich, Crocker, & Kowalski (2013) explored how high-performance women athletes managed injury and setbacks in sport. Three main setbacks were mentioned by participants: poor performance, performance plateau and injury. Stated to be the most common and challenging, injury in sport created many emotions for women athletes, including feelings of incompetence, self-blame, and self-doubt. Social support was reported to be one of the most effective and common methods of coping with
injury, combatting feelings of isolation when injured and helping them to cope with being withdrawn from the sport environment (Mosewich et al., 2013).

Looking exclusively at sport-related concussion, athletes who suffer from this injury in particular rely greatly on social support from family, friends and teammates. When less social support is available to athletes, it often leads to poor postconcussion outcomes, which include suboptimal somatic and emotional recovery, as well as lower quality of life (Wiese-Bjornstal et al., 2015). Often, concussed athletes have reported feelings of dissatisfaction with the social support from all sources. This could be due to the relatively invisible nature of concussions, as the physical appearance of an injury may attract more attention from others, and this can create significant difficulty for concussed athletes to cope with their injury (Covassin et al., 2014). Other instances of coping with sport-related injury have found social support to be very beneficial in coping with the injury itself and recovery. Rees, Mitchell, Evans & Hardy (2010) examined social support as it relates to psychological response to sport injury. Taking two samples of high performance and low performance athletes, they found social support to be positively related to psychological responses; however, the role it plays differs in the performance standard of the athlete. Thus it is important to maintain a consistent sample of participants in regards to performance level.

When there is a restriction in their activity, a long rehabilitation process or loss of control, athletes have expressed a difficulty in task-oriented coping and often engage in avoidance (Putukian and Echemendia, 2003). Covassin et al. (2013a) explored how neurocognitive performance and symptoms of concussion relate to the coping responses of high school and collegiate athletes at 3 and 8 days post-concussion. Strategies of avoidance coping – actively avoiding and not dealing with a stressful transaction (Lazarus and Folkman, 1984) –
were used by athletes who reported more total symptoms experienced, and were more frequent at 3 days post-concussion than 8 days. The use of avoidance to cope could be due to the lack of clarity in recovery time. It is common that avoidance coping is used in situations that are perceived as uncontrollable and is also used to gain control over the short-term emotional states experienced when sustaining a serious injury, like a concussion (Covassin et al., 2013a). Avoidance coping is associated with decreased functioning in the brain. A concussion tends to limit one’s ability to problem solve, so the simple choice to avoid is a common behaviour (Covassin et al., 2013a). Additionally, avoidance coping is consistent with athletes who experience more symptoms (King et al., 2014). However, it is not always considered to be a coping mechanism that is ineffective. Carson & Polman (2010) examined how it was utilized in coping with the rehabilitation of ACL injuries in male professional rugby players. They identified two forms of avoidance coping: behavioural, which included taking up a new hobby or being involved in alternative work and cognitive, such as refusing to watch a game when injured. Both of these methods of avoidance coping were used to an equal extent throughout their rehabilitation. Athletes also removed themselves from situations that resulted in negative emotional responses and this helped them to manage these stressful feelings. Adaptive strategies of avoidance to cope with their injury were used throughout their rehabilitation experiences and maladaptive ones were used only at the beginning of their injury experience, as their initial appraisal was negative. This suggests that avoidance coping can be utilized in a way that is productive and beneficial for athletes. There is potential for concussed athletes to similarly engage in avoidance coping to manage their injury and emotional experience.

Kontos et al. (2013) examined the coping responses to concussion and orthopedic injuries, comparing these responses accordingly. Concussed athletes were found to engage in less
coping efforts than those with orthopedic injuries. A possible explanation for this difference is appraisal of the injury. Athletes may not have appraised a concussion to be a stressor in which they need to engage in different methods of coping besides avoidance. The appraisal of how effective a coping mechanism will be for the athlete is also important to understand, as each individual views specific coping strategies differently (Covassin et al, 2013a). A concussion is unique to the individual (McCrory et al., 2013), therefore appraisal is a highly important factor to consider in examining coping with sport-related concussion. An important next step in research on coping with concussion in sport is to consider the appraisal of the injury, and looking at if and how it relates to coping (Kontos et al., 2013).

In understanding how individuals cope with concussion, Anson and Ponsford (2006) make a few suggestions on potential influencers. They suggest that avoidance, emotion-focused coping strategies are maladaptive and those characterized as active, problem-focused coping are more likely to help athletes to improve their psychological outcome following concussion. A poor self-awareness is associated with reliance on avoidant coping behaviours following concussion. Personality, age, and social factors also influence coping style. It can be suggested that the younger an athlete is when they experience their concussion, the less likely they are to use active coping strategies and the more likely they are to use strategies of avoidant coping. The style of coping that an individual used prior to injury can potentially influence their postinjury coping styles. As individuals develop coping styles prior to injury, it possible that these styles help prepare them to manage the uncertainty and various stressors associated with concussion.
Chapter 3: Methods

3.1 Paradigmatic Standpoint

An interpretive paradigmatic standpoint was adopted to explore how student-athletes coped with the emotional experience of concussions in sport. Rooted in a relativist ontological perspective, I acknowledged that the reality athletes experienced was dependent upon the ways in which they came to know it (Guba & Lincoln, 1998; Braun & Clarke, 2013). The social reality the participants experienced was one that is constructed by themselves through interactions and in this way, multiple realities existed that were subjective (Sparkes & Smith, 2014). Epistemologically, I recognized that the meaning of the sport environment to athletes was produced socially, suggesting that their perspectives of their concussion were shaped by experience and social norms (Braun & Clarke, 2006). In my research findings, I acknowledged that myself as the researcher am not separate from the research process. My personal subjectivity influences how the research is both conducted and interpreted. Throughout the research process, I personally reflected on how I believe my personal biases and thoughts may inform the findings of the research (Sparkes & Smith, 2014). This will be discussed in further detail in section 3.6 about reflexivity.

The research questions were guided by existing theory in coping with injury and emotions associated with the concussion experience, thus data analysis was conducted abductively, including both inductive and deductive thematic analysis (Sparkes & Smith, 2014). Themes were constructed based on previous theoretical frameworks, as application of Lazarus’ (1991) cognitive motivational relational theory of emotion was deductively applied. Themes were also based primarily on participants’ discussions of their concussion experience (inductive) (Braun & Clarke, 2016; Fereday & Muir-Cochrane, 2006). I interpreted the data beyond the
surface level meanings and attempted to construct themes that were inductive as well as
generated by theory that captured participants’ experiences with concussion in sport.

3.2 Participants

Table 3.2: Participant Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Participant (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>5</td>
</tr>
<tr>
<td>Women</td>
<td>8</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-21</td>
<td>9</td>
</tr>
<tr>
<td>22-26</td>
<td>4</td>
</tr>
<tr>
<td>Number of years as student-athlete</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
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<tr>
<td>3</td>
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<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Number of years in sport</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>2</td>
</tr>
<tr>
<td>6-10</td>
<td>3</td>
</tr>
<tr>
<td>11-15</td>
<td>5</td>
</tr>
<tr>
<td>16-20</td>
<td>2</td>
</tr>
<tr>
<td>21-25</td>
<td>1</td>
</tr>
<tr>
<td>Number of documented concussions</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
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<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Number of undocumented concussions</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
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<tr>
<td>2</td>
<td>3</td>
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</tr>
<tr>
<td>5</td>
<td>1</td>
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</tbody>
</table>

Prior studies on concussion that included university student-athletes were conducted
explicitly in the United States, and to my knowledge, a qualitative study had yet to be done with
student-athletes in Canada. Qualitative research allows the researcher to focus on the athlete’s own individual framing of emotional experience, as opposed to having a set, pre-framed outline like a quantitative questionnaire. This will acknowledge the notion of concussion emotional experience being unique to the individual and allow exploration of all emotional experience, as qualitative interviews do not limit athletes to just check off a set of specific emotions and any potential experiences, but rather leaves opportunity to explore any new, unique experiences (Braun & Clarke, 2013).

A unique sample, student-athletes are balancing both the demands of being an athlete and a student simultaneously (Covassin et al., 2013a). Thus, their experience with concussion was influenced by their status and the stressful demands of it had the potential to influence their ability to cope with injury. All participants were student-athletes having participated in sport either currently or previously while in post-secondary programs. Participants were selected from both team and individual sports, as well as contact and non-contact sports. In previous literature, it was cited that incidents of concussion are not limited to contact sports and non-contact sports have reported injury on many occasions (Kontos, Collins, & Russo, 2004). To be eligible for the study, participants had to have sustained a concussion in sport, not outside of it doing other activities. It was important to maintain consistency in the level of competition, as athletes are unlikely to experience an emotional response to something they do not have an investment in (Lazarus, 2000). Participants were both men and women, as previous literature identifies gender as a potential influential factor on concussion risk, severity and recovery time (Elbin et al., 2013; McCrory et al., 2013). Few studies to date have included women athletes and there has been a focus primarily on men athletes’ concussion experience. Research has found that not only do women experience more concussions than men but they also experience more symptoms that are
more severe and endure a longer recovery time than men athletes do (Covassin et al., 2013b; King et al., 2014; McCrory et al., 2013).

Prior to participant recruitment, ethical approval was obtained from the Behavioural Research Ethics Board (H16-03399) at the University of British Columbia. Criterion-based sampling was used to recruit a sample of 13 student-athletes (five men and eight women). This method of sampling enabled me to recruit a homogenous sample of participants who had a specific experience, which in this case was a concussion while participating in varsity, national, or provincial level sport (Sparkes & Smith, 2014). In determining a number of participants suitable for the study, Clarke and Braun (2016) recommend a sample size of at least six, due to the emphasis on patterned meaning. Patterns became apparent after approximately seven interviews during data collection. Various factors also affected how much data was needed to address research questions. Morse (2000) included four factors to be considered in addressing sample size: the scope of the study, the nature of the topic, quality of the data, and study design. This study was not too broad or narrow, as I aimed to understand how student-athletes coped with and appraised concussion-related emotions but also their general concussion experience, which created a data set that answered the research questions as well as provided context for experience. The topic was explicitly stated to participants and I utilized probing techniques throughout the interviews to obtain rich data that answered the proposed research questions. The quality of the data obtained allowed me to answer the research questions and also provided opportunity to ask participants about general concussion experiences. This not only added context to their experience but also allowed participants to reflect on their concussion which often brought up other emotions indirectly related to their experience. Thus, the sample size of 13 provided sufficient data to answer the research questions.
A total of 13 participants were recruited, five of which self-identified as men and eight self-identified as women. They ranged in age from 18 to 26 years, with an average age of 21.3 years. Nine participants were from team sports (field lacrosse, baseball, rugby, field hockey, football, soccer and basketball) and four* were from individual sports (wrestling, swimming, cheerleading, gymnastics, and karate). At the time of interview, nine of the participants were currently competing at the varsity level, and four had retired. Twelve participants had competed at the varsity level and one competed provincially only†. One participant had professional playing experience, and one was a current member of a national team. Participants had a range of 1 to 4 years of experience playing sport at competitive levels (provincial, varsity, national) and an average of approximately 3.6 years. In playing sport at every level, participants ranged from 4 to 24 years of experience, with an average of 11.7 years. Participants experienced a range of 1 to 9 concussions over their sporting career to date, with an average of 4 overall. 2.4 of these concussions were documented (i.e. diagnosed by a medical professional) (range of 1 to 6), and 1.6 were stated as undocumented (i.e. not diagnosed by a medical professional) (range of 0 to 5).

3.3 Procedures

Participants were recruited through posters, which were posted throughout the University of British Columbia Vancouver campus. They were placed mostly in areas where varsity athletes would see them, including the Varsity Training Gym, near baseball fields, the Gerald McGavin Rugby Centre, Doug Mitchell Thunderbird Sports Centre, National Soccer Development Centre, Thunderbird Stadium and the Allan McGavin Sports Medicine Clinic. They were also posted in different buildings throughout the campus on bulletin boards advertising various studies, with a

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* One participant had participated in two sports and discussed experience across both.
† The participant that had competed at the provincial level only was included as she was also a post-secondary student the time of her injury, thus classifying her a student-athlete.
focus on Kinesiology buildings as many varsity athletes are enrolled in Kinesiology undergraduate programs. The majority of participants (10 out of 13) were recruited from the recruitment posters on the UBC campus. Of the remaining three, two were recruited via word of mouth and snowball sampling, as the participant heard about it from their teammate who had participated in the study and the final one received information from their coach about the study. Initial recruitment efforts began in February 2017 by sending a letter of initial contact via email (see Appendix A) to the gatekeepers of the participant sample, coaches of varsity teams at the University of British Columbia. Coaches were asked for their assistance in recruitment by forwarding information to athletes on their respective teams. This method of recruitment proved to be a challenge, as a reply was often not received from coaches. I also went into Kinesiology undergraduate courses on campus and provided a brief overview of study information as well as my contact information for interested participants to contact me directly. Recruitment posters (see Appendix B) were posted around varsity facilities and places around the university campus where they would have the most visibility. Additionally, a few were posted off-campus. A total of approximately 200 posters were posted. Participant recruitment happened simultaneously with the interview process, and lasted until late November 2017.

Potential participants then contacted me via email, telephone, or text to be part of the study. Any questions they had regarding the study were answered. They were then provided a letter of introduction (see Appendix C) for them to review prior to consenting to participate via email. Potential participants were given a minimum of 24 hours to decide whether or not they wanted to participate in the study. Upon confirmation of their participation, an interview was scheduled at a mutually convenient time. All interviews took place in person on the UBC campus, in War Memorial Gymnasium or in private study rooms in campus libraries. Upon
arriving for the interview, participants were provided with a copy of the consent form (see Appendix D), and signed one for me to keep. They then filled out a demographic questionnaire (see Appendix E), which included questions about their sport participation and concussion history. Knowing previous concussion history was important to this study, as there is potential that it influences how they feel about their injury. If they have had many concussions, it was possible that they would express more worry towards their future (Mrazik et al., 2016). All participants were offered a $20 stipend as compensation for their time and to cover any related travel costs.

Throughout the recruitment and interview process, confidentiality was emphasized as the topic of research is sensitive, with the interviewer asking participants questions about a potentially difficult experience. All participants were assigned a pseudonym in the transcripts. To further ensure they would not be identifiable by anyone reading the document, I removed any mention of the sport they participated in, teammate or coach names, as well as mentioned locations and places. All transcripts were kept on the lab password protected computer and my personal laptop which is also password protected. At the beginning of each interview, confidentiality was explained verbally to each participant to ensure that they understood it and answer any questions they may have had. Additionally, it was emphasized that their participation was voluntary and they were free to withdraw at any time without any consequences. Information provided to participants regarding confidentiality can be found in Appendix C and D.

Each participant took part in one semi-structured interview. Semi-structured interviews were chosen as it allows the researcher to collect information about the topic of research and also gives participants the opportunity to report their own thoughts and feelings. Participants can
reveal more about the various meanings they assign to their experiences and this results in deeper understanding of feelings they had related to these phenomena (Sparkes & Smith, 2014). The interviews ranged from 40 minutes to one hour and 20 minutes in length, with an average of 52 minutes, for a total of 11 hours and 15 minutes of interview time, which yielded a total of 296 pages of transcripts. Interviews were audio recorded on an iPhone 6s Plus and an iPad Air 2 using the voice memos application. They were then transcribed verbatim and following complete transcription, I listened to the recording again to ensure that the transcript was accurate and representative of the data, as suggested by Braun and Clarke (2006).

The interview (see Appendix F) was based primarily off of existing literature about the emotional experience of concussions, and the focus was to further understand how the participants coped with this experience. Topics in the interview included: their general concussion experience including symptoms, timeline of the injury and their understanding of their concussion; cognitive appraisal of their concussion at the time and currently; how they managed the emotional aspects of their concussion; the social support network they had available to them during injury; and advice they would give to other student-athletes whom are experiencing a concussion.

3.4 Data Analysis

A thematic analysis of the data following Clarke and Braun’s (2016) guidelines was conducted to understand how student-athletes coped with the emotional experience of concussions. Thematic analysis is “a technique or method for identifying and interpreting patterns of meaning (or ‘themes’) in qualitative data” (Clarke & Braun, 2016, p. 84). This form of analysis was chosen as it is flexible and can be applied to any ontological, epistemological and theoretical framework (Clarke & Braun, 2016).
All interviews were transcribed verbatim using ExpressScribe transcription software. During transcription, data familiarization began by making comments about parts of the data that were relevant to the research question. This helped to aid coding and data analysis, as it enabled me to make sense about what was in the data and the semantic meaning of it (Clarke & Braun, 2016). Coding was done in various stages, following a complete coding approach. Complete coding involves coding anything and everything relevant to the research questions throughout the entire dataset. First, each transcript was coded semantically, focusing on the explicit meaning of the data, directly mapping out what the participant has said. Even if something was not directly relevant in answering the research questions, it was coded as I coded widely and comprehensively (Braun & Clarke, 2013). The purpose of doing this was to capture anything that may help to make sense of codes later, such as context and background. By doing this, it helped me to understand context that certain experiences were mentioned in, which aided final theme formation. At the end of coding stages, transcripts were reviewed up to three times to make sure that everything potentially relevant was coded. Coding first began on the paper transcripts themselves, and then I began coding in NVivo to collate the codes. Throughout the coding process, notes were taken in my reflexive journal for each transcript, where I made note of any potentially important thoughts that could inform theme formation. This coding process resulted in a total of 481 instances of a code across all 13 transcripts. Each code description was then reviewed and any duplicate codes were merged. This resulted in 423 codes after merging. Codes that had similar meanings or were interpreted to be directly related to one another were organized as child nodes under an overarching parent node in NVivo. I continued to organize and reorganize the codes and nodes as I interpreted the data to begin formation of themes. During this phase, I also ensured that codes were informative enough to capture the essence of the data,
as well as my analytic take on it (Braun & Clarke, 2013). Following the coding in NVivo, all
codes were written on Post-It notes and placed on a wall in my home, where I began to visually
organize related codes together. This helped me to then go back to NVivo and organize all codes
under parent nodes, which captured the meaning of what each code connected to in relation to
the research questions. Fifty parent nodes with child nodes under each were finalized at this
stage.

By this point, I was beginning to piece together some potential themes that were evident
within the data. To begin to make sense of them, I started to write part of the findings, going
back between the codes and the data sets themselves. Known to be more recursive than it is
linear, thematic analysis is an iterative process that often results in the research going back and
forth between the various stages of analysis as it progresses (Clarke & Braun, 2016). This was
especially true for my analysis, as I often would write some parts and then go back to review the
transcripts in order to ensure that I best represented what was in the data with that theme. At this
stage, I had identified three candidate themes and sub-themes: 1) avoidance of concussion-
related emotions; 2) acceptance of their current situation and injury; and 3) social support
networks.

The next phase of analysis was a more focused read through of the raw data, where I
went through and identified four core elements: 1) what participants were coping with; 2)
incidents of when social support was used; 3) when participants experienced emotions; and 4)
descriptions of emotional experience. The purpose of this was to align these elements with the
current potential themes I had previously identified. I used coloured Post-It flag notes and
assigned a colour to each of the core elements. During this stage, I began reflecting on what the
current potential themes I had identified meant in relation to the research questions. Clarke
(2017) described two types of themes: bucket themes and storybook themes. Bucket themes, also known as domain summaries, are when the researcher selects a part of the data related to the research question and summarizes everything said in related to the question. It is very latent (surface level) in meaning and is then reported as a theme (Braun & Clarke, 2016; Connelly & Peltzer, 2016). Storybook themes are themes that tell a story about the data and reflect the interpretive lens the researcher has utilized and there is a clear, core idea that brings the theme together (Clarke & Braun, 2016). With understanding of these concepts, I began to realize that most of the themes I had created thus far were more similar to bucket themes. However, as the analysis progressed, storybook themes developed as well.

In the next phase, I reviewed the candidate themes I had come up with and began questioning what was underpinning these specific participant experiences. I reviewed each individual quote and interpretation within each candidate theme and sub-theme. I also listened to audio of each transcript in an attempt to make note of participant tone of voice when they were discussing specific details relevant to current candidate themes. Throughout this process I reflected on the current candidate themes and reviewed each to ensure that interpretations of the quotes were rooted in the data. If they were not, I either removed the quote or utilized supporting pieces of other parts of the transcript to make sure that my interpretations were clearly exemplified. I found throughout this review that certain interpretations were in fact not rooted in the data. For example, a quote from one participant I had categorized as “social withdrawal”, when it was actually a form of a social isolation he was describing, as opposed to removing himself from social situations. Throughout this process, I came up with the final themes: 1) unique experiences of concussion; 2) the culture of sport influences how participants view their
conclusion; 3) distractive coping facilitated positive reappraisal; and 4) concussion recovery is difficult with limited information.

Since each participant experience with concussion was so unique, I knew that this needed to be accounted for, as it directly impacted appraisals. That was how the first theme was formed and validated, as each sub-theme addresses the unique experiences and captures them in an organized way. The culture of sport appeared to come up various times throughout the interview and also impacted appraisal of their injury. These two themes were under a higher order theme of “cognitive appraisals of concussion”. The third theme of distractive coping encompassed how participants utilized various forms of distraction and attentional diversion to cope with the challenges of concussion. A constant theme of limited information came up throughout and this was accounted for in the final theme, as I found that it connected directly to how participants sought social support. These two final themes are therefore under the higher order theme of “coping methods to manage concussion”. These final themes told a coherent story of each participants’ concussion experience while also ensuring the individuality of each experience was equally accounted for. A detailed thematic map of how themes were organized can be found in Appendix G.

3.5 Credibility

In judging the quality of qualitative research, it has been suggested that specific criteria are to be followed (Sparkes & Smith, 2009). Yet, this has been criticized, advising that the quality of qualitative research cannot be held to specific criteria (e.g. Burke, 2016; Smith & McGannon, 2017; Sparkes & Smith, 2014). Instead, researchers should select criteria that fit the context of their research and are flexible in nature (Burke, 2010; Sparkes & Smith, 2009). Therefore, in assessing credibility of this research, I will address the five chosen criteria for this
context: worthy topic, sensitivity to context, commitment and rigour, transparency and coherence, and impact and importance (Burke, 2016; Sparkes & Smith, 2014; Tracy, 2010; Yardley, 2000; 2008).

A worthy topic is one that points out surprises and questions the taken-for-granted assumptions about the topic. Good qualitative research is considered to be relevant, timely, significant and interesting (Sparkes & Smith, 2014; Tracy, 2010). The topic of concussion in sport is one that has growth significantly in the last two decades. Despite this growth, an area in which research and understanding is lacking is within the area of psychological issues related to concussion. As well, research that exists within this area has been focused primarily in the form of quantitative studies and still lacking are qualitative studies about psychological perspectives of concussions in sport (Kontos, 2017). Studies on this topic are important as they can help practitioners to better understand individual experiences of athletes with Qualitative methods provide athletes with an opportunity to speak freely about their unique experience and gives the researcher an opportunity to explore various aspects of concussion. Current studies on the psychosocial aspects of concussion are relatively inconsistent, as very little is known about how athletes cope with emotions they experience with concussions specifically, especially when they have a history of more than one concussive injury. There is a need for emotions associated with concussion to be examined on an individual basis as well (Hutchison et al., 2009). The worthiness of this topic of research has helped to address the gaps in the literature addressed in Chapter 1 and 2, and it will be demonstrated in the Discussion section (Chapter 5) how they have done so.

Sensitivity to context involves careful consideration of socio-cultural contexts that may impact participant’s perspectives of their experience (Yardley, 2000). Throughout the interviews,
it became evident that the sociological culture of sport was heavily influencing both how participants view their concussion and in turn, their ability to cope with it. With a culture of playing through pain and injury being mutually accepted across all sport, I took this into consideration, asking participants about this culture through the interview process. There was also potential that participants would be unable to recall their experiences exactly as they occurred. However, I found that as the interviews went on and we progressed through the various topics, it would trigger a new memory related to their concussion experience.

Commitment and rigour includes careful attention to the best practices at each stage of the research process (Burke, 2016; Yardley, 2000). During data collection, I first began by conducting a pilot interview to ensure that the questions I had in my interview guide flowed well and were comprehensible for participants. I made changes to the flexible interview guide as different patterns became apparent following reflection after each interview. This allowed me to ask other participants about different coping mechanisms and perceptions that appeared to be salient in other interviews to establish potential themes throughout. Throughout data analysis and the entire process of my research, I utilized “critical friends”, including my supervisor who is an expert in coping in sport literature, as well as a post-doctoral fellow who has expertise in qualitative research methods and thematic analysis (Burke, 2016; Smith & McGannon, 2017). Defined by Smith and McGannon (2017) as “a process of critical dialogue between two people, with researchers giving voice to their interpretations in relation to other people who listen and offer critical feedback” (p. 13), this helped me to achieve rigor and quality in a few ways. Firstly, it allowed me to work through the thought process I was having during the data analysis and maintain an audit trail of how I came to develop specific themes and sub-themes. This provided me with opportunity to reflect on and explore different explanations and interpretations of the
data through rich discussion. Secondly, it provided me with feedback on what I had done thus far and an opportunity to discuss the best ways to go about moving forward. As it was my first time conducting research of this magnitude and size, having someone to discuss ideas with during the process helped me to validate ideas and challenge new ways of thinking about the data.

Transparency and coherence refer to fit between the research question, theoretical frameworks and methods, as well as reflexivity throughout the process of how the researcher can shape the research process and findings (Burke, 2016; Yardley, 2000). To prepare for this research, I continuously read new articles about both the topic and qualitative methods as they apply to the project. This helped me to better understand the significance of findings as they relate to the broader field of sport and exercise psychology and how they can make a significant contribution to research. I also kept an audit trail during the recruitment process, including details of when participants contacted me, how they heard about the study, as well as when the interview took place. I also collected the different forms included in the Appendices to keep track of all participant information. I kept a reflexive journal throughout the research process, addressing my personal biases, thoughts and feelings about the interviews and recorded how this might inform the findings. Additionally, throughout the entire data analysis process, I documented each step, including recording coding stages by date, complete amalgamation of these codes and tracking how many codes were left after each stage. Throughout further phases of analysis, I kept track of how I formed the themes, noting the different candidate themes I formed and noted how they fit into the final themes. A detailed map of how I did this is included in Appendix G.

The impact and importance of the research addresses how the research may inform or be applied for specific users or communities (Burke, 2016; Yardley, 2000). The findings of this
study have many practical implications for sport policy makers, especially at the level of university athletics. As the participants in this study are all student-athletes, they have direct experience with university athletics coaches and policy makers. There is potential for change in the athletic community based on these findings. For example, participants often stated knowing very little about their injury when it first occurred. By creating information books or recourses for student-athletes to access, this issue can be addressed easily for university athletics. The findings of this research are both timely and relevant for the field of sport and exercise psychology as well as for wider sport policy makers. This is further discussed in the practical implications section in the discussion (Chapter 5).

3.6 Reflexivity

Reflexivity is important to the qualitative research process. As stated by Sparkes & Smith (2014) to be reflexive means “to bend back upon oneself” (p. 20). It is the process of being thoughtful and aware of how the researcher’s social background, underlying assumptions, positioning and behaviour can impact the research being carried out (Sparkes & Smith, 2014). Further, Braun and Clarke (2013) explain that when representing an individual’s experience, it always requires an interpretive process and it is always influenced by our own assumptions, values and commitments. Thus, it is important to make note of these factors and how they impacted both the development of this study and how it was conducted.

At the beginning of the formation of this study in the summer of 2016, I took time to reflect upon why I chose to study this topic and how previous biases and interests could inform my research. The topic of research was selected based on my personal interest in sport. I grew up participating in a variety of sports including figure skating, volleyball, basketball, and rugby. I never participated at a highly competitive level and would classify my participation as more of a
recreational sport experience. In addition, I never experienced a concussion before but did experience a knee injury. It required me to cope with being away from my rugby team at the end of the season and miss out on our most important game, so I am familiar with the feeling of setback due to injury. I chose to end my sporting career at the end of my high school and instead pursue post-secondary education in sport management. I have been an avid sports fan since I was five years old, following hockey very closely and I wanted to transition this passion into a career.

My interest in concussions in sport began in 2011 following the death of Derek Boogaard of the New York Rangers. Derek died as a result of an accidental drug and alcohol overdose while he was recovering from a recent concussion. The painkillers he was taking at the time of his death were prescribed to him by team doctors, and they were aware that he had previously been addicted to them but gave them to him anyway. I found myself attempting to make sense of his death and piece together what happened in relation to his concussion history, reading many articles about him as well as published book about his life by John Branch. I waited for the National Hockey League (NHL) to make statements and launch an investigation into what happened. However, this never happened and it felt to me as though the loss of Derek meant nothing to the league. That same summer, Wade Belak and Rick Rypien died as a result of concussion-related depression, bringing the total to three players losing their lives as a result of injuries sustained while playing professional hockey. It was difficult for me to continue to support the NHL when they treated the deaths of these three players very poorly. I developed a vested interest in concussions in sport, following any stories related to concussion closely. I always wondered why more attention was not given to the emotional struggle of the injury, considering that this aspect of concussion had resulted in the deaths of three professional hockey players. During the last two years of my undergraduate study, I began taking sport psychology
courses and familiarizing myself with research in the field. When I came to UBC it became clear to me what I wanted to study based on what I had been emotionally invested in for the previous four years and my desire to make a difference in the field of concussion research. Derek Boogaard is thus the inspiration for this study and it is dedicated to him in his honour.

When I began to consider what I would choose to research for my Master’s Thesis project, I knew it would be about concussions. As I read literature, I found that very little of it focused on emotional and psychological experience with concussion. The majority of research available looked at the physical symptoms of concussion and how best to treat them clinically. Additionally, very little research utilized qualitative research methods. I prepared myself for the research process by taking a qualitative research methods course and it was in this course that I began to critically think for the first time about my research interests, as well as which methods I would apply to research it. I chose qualitative research methods for a variety of reasons: firstly, most of the studies that I had read about concussion were quantitative and I personally felt that it is challenging to record how people feel about an experience utilizing quantitative methods. By providing individuals with specific criteria to evaluate and reflect on their experience with concussion, I felt that it was ineffective as some people may have completely different symptoms that cannot be captured in this set criteria. I view it as important to allow individuals to talk openly about their concussion experience and capture this as a story. Secondly, with a growth in qualitative research over the past decade, there is a need to continue producing research using qualitative methods in the field of sport and exercise psychology (Smith & McGannon, 2017). I felt that by using qualitative methods, I could contribute to the field of qualitative research in sport and exercise. This is important as qualitative research provided me with the opportunity to explore emotional experience beyond specific criteria on a questionnaire or survey and provided
participants with the opportunity to speak about their complete experience in an interview setting.

During the study, I found myself relating closely to the findings of the research. I experienced various setbacks during the research process including the loss of a close friend. In coping with these difficulties, I found myself reflecting on what participants had said during the interviews, as their coping mechanisms closely related to my own. Strategies of cognitive reframing, positive affirmations, common humanity and social support were instrumental in helping me to overcome setbacks experienced. I found that positioning myself in the place of the participant helped me to better understand what they were experiencing and make sense of it critically.

As previously mentioned, I have also never experienced a concussion which at first, I perceived to be a challenge. I was concerned that I would not be able to relate to participants’ experiences and make sense of the data. However, I found various ways to relate to it despite not having a direct experience with it. For example, when thinking about the various limitations participants experienced during their concussion, I began thinking about what that would be like if I were experiencing it. What would it be like to not know what is happening to you and having to sit in the darkness (figuratively and literally) unable to read, watch TV, use a computer, etc. because of symptoms? I positioned myself in this situation and began reflecting on how I would feel. Feelings of sadness, depression and confusion came to mind. I began to see this more in the data and pull out specific parts where participants alluded to this, without making assumptions. This helped me to further understand the data and it aided theme formation, while still acknowledging my personal position. My position also helped with probing during the interview process, as some questions I asked were based on personal interest or misunderstanding. For
example, throughout the interviews I asked participants about their general concussion experience. Depending on their response, I would ask them specific probes to picture what their experience was like and this provided context for it, which was important in the later stages of analysis. My personal reflections on the data were therefore an important part of the data analysis process and final preparations of the document.

Throughout the research process, I kept a reflexive journal. After each interview, I would make note of things that stood out to me, as well as various thoughts or feelings I had. The interview that stuck with me most was with Carley. I found myself closely relating to her experiences and emotions throughout the interview. Following the interview with her, I made notes reflecting on the interview and my personal thoughts:

*Carley’s interview changed me. For someone who experienced something so traumatic, she is able to speak about it with grace and exudes strength. She is so resilient and strong. A lot can be learned from this interview. I could not help but feel an emotional connection to her in the experience. I felt as though I was having a conversation with myself. I am so glad that she contacted me to be a part of the study and that I got to meet her. The story she told of resilience is so important. She is so brave.*

These journal entries allowed me to understand my feelings and perceptions of what was happening during the interview process. I found myself reflecting on how each of them went after, concerned that I did not conduct them as well as I could have. I consider myself to be very self-critical and a perfectionist, and this became evident throughout the interview process. After the interview with Carley, I wrote: *I wish the other interviews were like that. Could I have improved them or prepared better for them?* Since this was my first time interviewing, I feel that I went in with very little experience. However, various academic articles about qualitative
interviewing (e.g. Braun & Clarke, 2013) helped to prepare me for the process. As I conducted analysis, I began to see there was a lot more in the data than I had previously assumed. Thus, the reflexive journal proved to be important in addressing these concerns throughout and maintaining a strong critical awareness of how my self-critical perceptions impacted the research process and findings.
Chapter 4: Findings

Four themes were identified to describe how varsity athletes appraised and coped with the emotional experience of concussions in their sport, including (1) unique experiences of concussion, (2) the culture of sport influences how athletes view concussion, (3) distractive coping facilitated positive reappraisal, and (4) concussion recovery is difficult with limited information. Themes and sub-themes are listed in Table 4.1 and are presented in detail in the subsequent sections.

Participants were coping with various life stressors both related directly (i.e. symptoms, loss of sport, limitations) and indirectly (i.e. other injuries they had already endured, time of injury) to their concussion. Themes have been organized by appraisal of their concussion, followed by descriptions of coping strategies to manage the injury, consistent with literature in coping and emotion (i.e. Lazarus, 1991; 2000). The first theme presents the various stressors participants appraised that played a significant role in the concussion experience. The second theme is also about appraisal, specifically how it was influenced by the culture on individual teams. The final two themes present the coping strategies of distraction and social support participants utilized as a result of cognitive appraisal of their concussion. Themes were organized in this way to provide context for each participants' understanding of their psychological and emotional experience with concussion in sport.

Table 4.1: Developed Themes and Sub-Themes

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-Themes</th>
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<tr>
<td>Unique experiences of concussion</td>
<td>a. Limitations due to injury</td>
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<td></td>
<td>b. Timing of injury</td>
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<td></td>
<td>c. Concussion is a difficult emotional experience</td>
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The culture of sport influences how athletes view concussion

- Factors that lead to acceptance of the sport culture
- Being injured is a sign of weakness
- Injury is just part of the sport experience

Distractive coping facilitated positive reappraisal

- “I think doing some things is necessary”: Distractions to manage concussion
- Reappraising concussion and seeing opportunities
- New perspectives on sport and life

Concussion recovery is difficult with limited information

- Implications of misunderstanding of concussion by self and others
- Importance of support from people who have experienced concussion

4.1 Unique experiences of concussion

*I never experienced anything like that life altering in my life to that point where you kind of have to stop living for a while.* - Moriah

While each participant had experienced a concussion in sport, each of their individual experiences were unique. Their concussion was different from anything they had previously experienced due to the emotional difficulty associated with the injury. Some experienced similar symptoms, however, the ways in which they coped with them varied based on a variety of factors, including: (a) limitations during injury, which included the tasks they were no longer able to do as a result of their concussion and how participants experienced this; (b) timing of injury, where participants described how the time at which their concussion occurred impacted their appraisal of it; (c) concussion is a difficult emotional experience, emotional difficulties they had during their concussion experience, including descriptions of emotional responses to the various facets of concussion.
4.1.1 Limitations due to injury

As a result of their concussion and the related symptoms, participants were coping with limitations psychologically, emotionally and socially. They were often unable to do the regular things they did prior to being injured, and their daily routines were disrupted. Adapting to this became a challenge for participants. James described how he had a desire to be continue doing things as he had prior to his injury. The limitations he had resulted in having to slow down his lifestyle, making these tasks more difficult to achieve:

“It’s just really frustrating ‘cause like you wake up and you’re just like ‘okay I wanna go do this today’ and it’s just like, ‘well functioning at like 50, 60 percent.’ And it’s like I wanna go hang out with friends. And it’s okay, so you’re sitting there but you’re like distant [laughs]. Like you, you’re there but you’re not really there, ever. Until like, you’re getting better. So it’s like okay, you talk to the doctor and the doctors like ‘okay go rest’. You talk to physio, it’s like ‘okay you should do these exercises and rest’ and then it’s just like, especially with like how long a concussion it was, it just like, drew out and by like a month in you’re just like ‘okay’ like you get into just like a constant cycle. Like sleep, wake up, out of it, school, sleep, wake up, out of it, so. And then like you can technically, you could do other things but you’re not like doing them at the capacity you really want to.

James expressed a desire to spend time with friends, maintain an active lifestyle and continue going to school but he was unable to due the symptoms he was experiencing. This was frustrating for him as he describes himself as not functioning normally due to the cloudiness he experienced as a result of his concussion-related symptoms. In David’s experience, while he felt
supported from family and friends, he was experiencing a sudden loss of everything he was used to similar to James. He described what this was like for him and how he appraised his injury:

Yeah, definitely. There was a lot going on. There was a lot of things that I all of a sudden couldn’t do anymore that was such a big part of my life so kind of just everything was cut off for me. I didn’t necessarily feel like isolated ’cause I still had a lot of friends and family that were keeping close tabs on me but in terms of like, my personal goals and with school, and [sport] I think that was kind of just taken away from me for a little bit which it never had been in my life before for the most part. I’d at least never had a brain injury before so, yeah it was kinda, [pause] yeah, it was just a different experience, yeah.

The newness of the injury and loss of familiarity made for a difficult experience for him, as he attempted to understand what was happening to him. He emphasized how he had not previously experienced losing his ability to reach personal goals, as well as school and sport-related goals which made it more difficult to cope with. Sam also emphasized the loss of sport and its impact. He was coping with feeling physically able to play but knowing that he is still injured. He explained the internal battle he fought with this:

... Like I think the worst thing about concussions is that you are so mobile, and you feel like you could probably could go out and play and everything. And then you can’t. Because you know? So I think that’s the biggest challenge with it. You know if you break your foot, you know there’s no chance you’re gonna go play [sport]. But like ‘ah it’s just my head, like I could go play’. But it just, I think it just varies. Like everyone’s symptoms vary. You know like in how their body reacts to it.

While he feels physically fit, he knows that he cannot go and do things as he normally does due to the symptoms. The limitations often resulted in a repetitive routine for participants, which
became boring for them to live with. In Rosalie’s experience, she described how everyday became the same: going to school, coming home to rest. The same routine paired with her memory issues as a result of concussion made for a difficult experience for her:

> I’m just really depressed and tired. I wanna study but physically looking at the lecture notes, I didn’t get anything from that. I was in a lecture but I came out like, what have I learned? ... I sleep, I go to class and then go to practice. And then, by that time it was like seven when I got home after practice, study and sleep again. I couldn’t remember actually it’s just every day, the same. … But it was like living in a cloud.

The repetitive routine paired with new difficulty in school due to symptoms made her feel depressed. She was attending practice by guidance from her coach but was unable to participate. In reflecting on this experience, she describes it “like living in a cloud”. This speaks to how she was unable to remember things and live normally.

The invisible emotional and psychological symptoms are difficult for participants to cope with throughout and become a challenge to adapt to unlike physical symptoms of other injuries that have a timeline for rehabilitation and recovery. For participants this resulted in difficulties as they felt they were unable to do things to move them closer to returning to sport. Kate struggled with missing time away from sport, and seeing her teammates reach “major milestones” in sport without her:

> Any time you miss out on a major life event I would say is also, always bad. And just watching – well, it’s probably partially me being kind of ultra-competitive – but watching other people succeed and, do things that I could’ve done but I can’t. That really, really is not good for me. It’s so bad. … It’s like major milestones in other people’s lives that they’re attaining and reaching and they’re succeeding and that I’m not. It’s like less so
for going out and socializing but more just for like achieving things that I’m not able to at the moment.

The social comparison between herself in the situation and feeling like she is missing out on those opportunities made it more difficult for Kate to cope. She was so focused on sport success that when it became unattainable, it was challenging for her to accept.

The manifestation symptoms were difficult for participants to understand and cope with, as it was unpredictable in how they affected participants’ lives. Sarah described her concussion as having a huge effect on her identity and personal perception of self. She explained how this manifested in her everyday life and created issues for her:

Well, you don’t know where things are coming from, why you’re feeling certain things, it’s like you can’t trust your own brain. That’s everything, you know? Brain is who you are so, if you can’t trust that, it’s just a weird state to be in I would say. Yeah. And if you don’t know how it’s gonna manifest in your daily life and you go to do something or read something and normally you can remember this and you go and you can’t, it’s very inconsistent. And you kinda have to re-learn who you for like a period of time, I guess.

She experienced emotional and mental barriers to in her life, emphasizing how she felt she was unable to trust her own brain and it was very unpredictable.

Difficulty with brain function and cognitive ability created emotional difficulties for participants, as they cited feeling confused and unable to communicate to others what they were feeling. For Tyler, he was missing out on various social events due to these limitations. He felt distanced from his friends as he was unable to communicate to them what he was feeling. He explains:
Like there’s lots of social things going on because the first semester being back at school, you’re second year university so, it’s when you’re like starting to be a social butterfly in a sense. And yeah, getting invitations to all these parties and being like ‘oh sorry I can’t’ and it’s like I’m not trying to make an excuse to hang out with you guys because I really want to but I just like I physically or mentally can’t come out. ... So that sucked. Not being able to have a social life in that sense too because it’s such an integral part of like the university experience I suppose right?

Missing out on opportunities at the beginning of the semester to make new friends and experience new things was difficult for Tyler, as he was limited by what he could do when he was injured. By missing out on social opportunities, there was a loss of social interaction and potential support.

The symptoms participants experienced in their concussion created limitations in their lives cognitively, psychologically and socially. The various difficulties of these limitations speak to the challenge of concussion and its impact across various parts of life. The various facets of concussion were a challenge in all aspects of life and were also influenced by the time at which injury occurred.

### 4.1.2 Timing of injury

Dependent upon the time of the season or year, participants appraised their concussion as more or less threatening. Participants often cited the timing of the injury as a significant source of stress, especially if it was before a big game, tournament or event they knew they would miss out on. Additionally, their school year was impacted by their concussion as they often had to miss time to recover. David was in his first year on the varsity team when he experienced his
concussion and describes the challenges of not knowing how to manage his injury, being part of a new team and school-related stress:

\[
\text{It was my first year so I didn’t really know how to deal with everything ... it was kind of an important part of the year for me with [sport] wrapping up for playoffs, and school coming down to exams at the end so it was probably negative for me at the time because I wanted to do well and everything and I felt like the concussion was kind of holding me back or preventing me from doing what I wanted to do, what my goals were for the year.}
\]

\[
\text{So it was probably a negative experience I would say I guess at first ...}
\]

The concussion interfered with his personal goals for the year both in school and sport. He felt the pressure of the exam period approaching and the playoff season for his sport. Tyler had a similar experience, explaining how the time that the injury occurred impacted both sport and school resulted in an emotional response. He experienced feelings of anger due to the time and circumstances:

\[
\text{I was pissed, I was pretty angry. Well I was angry that I couldn’t play the sport that like I trained all year for. That sucked. I was having a pretty good year as well, like personally.}
\]

\[
\text{The team not so much, but personally I was having like a pretty good year and I was actually pretty stoked. I was also pissed at the fact that, like I was in school at the time of course as a varsity athlete, so I was trying to manage both sports and school on the side and it sucked with school because I missed on like multiple exams and shit so, I actually ended up on academic probation.}
\]

A year that he felt was personally productive was interrupted by his concussion, as well as his school career which resulted in him having to extend his degree another year to finish required coursework. Trying to cope with his injury and setbacks in school became difficult for him to
manage. Rosalie also experienced disturbances in her school career at the time, and she felt that it “messed up” that part of her life:

That was my first time in Canada, my first time in university and then I was like, what is happening? You know? Everything is new and then I didn’t do midterms so, my finals got messed up. Yeah. So it’s like, okay I got a concussion and then everything after that is like messed up.

Adapting to a new lifestyle was already challenging and the concussion made it even more difficult. At this time, she was also coping with the new changes and her concussion became an additional source of stress. This speaks to how critical the timing is and the potential negative implications it can have for athletes.

Being in the first year of the varsity program was a challenge in adapting to a new environment. Tonya was also in her first year with her team and felt that her concussion put her at a disadvantage as she missed crucial training opportunities:

So it was really hard now that I had this set back and I couldn’t do that. So it was really hard because, I was new too and they basically you know, they start slow and then they usually build up on all the moves. So I missed all of that. I missed all that experience, I missed all the learning opportunities. So it was really hard. But I knew I couldn’t wrestle with a concussion so I had to. I’ll just have to try harder, try twice as much when I get back there.

Her concussion had occurred due to not understanding a move that her opponent was making, and this was frustrating for her. Missing more time where she could have been learning moves to protect herself in the future was even more a source of frustration, making the timing of her injury difficult.
Participants were highly concerned with missing big tournaments in their sport at the time of injury. They explained incidents of feeling like they had missed out and how it became hard to watch other people play in the tournament they expected they would be a part of too. Kate missed a big national tournament when she was concussed. She explained how this timing made it more difficult to cope:

... *As far as like personally being able to deal with it, I think this last concussion was harder. It felt harder because I missed out on playing in Nationals and it was [pause], it would’ve been really exciting to be part of that. ... I think you’re still just dealing and accepting, or not accepting, it and then having to come to the realization that I’m not gonna be able to play in like the big final.*

She compares it to concussions that were longer in duration and explains that it is not how long it takes to recover but the timing that is more so a factor. Knowing that you are missing out on something makes it harder to cope. She struggled with coming to the realization that she would not be able to be a part of something she strongly valued.

After one concussion, participants were at a higher risk for subsequent concussions. Moriah described her concussion experience as difficult with no support from her team. When she finally did recover, she had to cope with re-injury in her second game:

*So he cleared me [laughs] and like my first game back was a tournament in [city] over the Christmas break. ... And then like the next game I got another hit the head and I was like ‘for the love of God’ [laughs] so I was out again. But yeah, no it’s really hard to deal with and I don’t think you really have like, at least we didn’t, there was like no support in place at all.*
She knew right away she was concussed and would have to go through the same difficult emotional experience she had just overcome. The timing of the second concussion magnified how challenging it was, as she was concussed again in only her second game back after a long recovery. The difficulty of going through recovery again with no support from her teammates and coaches also contributed to this stress. The importance of social support will be further address in section 4.4.2.

The timing of the injury was an important factor that played a role in the various appraisals participants had of their concussion. Along with the symptoms of their injury, participants were struggled to adapt to new team environments, manage untimely setbacks in school as well as sport, miss out on important tournaments and cope with quick reinjury when they return to sport. The emotional difficulty of concussion was one of the biggest stressors that participants were coping with and it was also the most strenuous aspect of the injury.

4.1.3 Concussion is a difficult emotional experience

Participants often stated that their concussion was a difficult emotional experience, as the impact of the symptoms elicited an emotional response that became difficult to cope with. They described comparisons of concussion to musculoskeletal injuries they had experienced in previous seasons to demonstrate how the emotional and mental weight of concussion makes it much more difficult to overcome. Sarah felt a stronger emotional response to her concussion than with other injuries:

*I would generally get emotional, I would get upset. You get kinda mad too, it’s like ‘again? Really?’ But you try to kinda just put that aside because it’s not productive and you just try to deal with it and move forward and look after yourself as best as you can but it’s generally much more emotional than having – and I’ve had a whole bunch of*
musculoskeletal injuries – and you get upset with those as well but it’s not the same thing. Kinda messes with your identity a bit too because it’s, yeah, it’s your brain so.

In her previous experience with other injuries, she never felt the emotional weight like she did with her concussion. With heightened emotions, it was a much bigger challenge to manage as it is an injury that directly affects your brain. The emotional difficulty during concussion was something Sarah experienced and she struggled to make sense of it:

*I think that the symptoms of concussions at least for me and some of the times for other people is, your emotions just kinda go crazy. And you know, you see a lot of girls when they get hit and they’re crying and kinda that’s a symptom, as well as when you get injured or you get hurt or you’re scared, you’re also emotional. So, the combination of those two just end up being a lot of emotions and I’ve always found it hard to differentiate if I feel upset that I’m concerned that I’m concussed or I just got whacked or if it’s actually because that’s a symptom of a concussion. And if it is a concussion, you don’t know if you’re upset because you’re concussed or if the concussion is making you upset. So generally there just is more emotions but, I’ve never really differentiated which is which and where they’re coming from and why. So, that’s I guess my experience. It’s confusing.*

Concussion created heightened emotional sensitivity for many participants and they often felt simple things resulted in emotional responses they did not recognize as normal. Ben noticed that when he was concussed, he experienced a lot more anger, and things that did not anger him before now made him angry:

... *Since I had the concussion I’ve getting slightly more like, I’ve caught myself kinda with like a lot of anger sometimes. Just getting really irritated very quickly. With like, just*
being a biker on the road, someone cuts you off and I’m not happy. ... I have no patience for it. When it happens, it’s people on the road or I don’t know, slight things. Like, I was playing video games the one time but I haven’t been just because of the TV it hurts my eyes, I just remember the one time I was getting so frustrated and I just have to quit it. I don’t know, just getting angry. It’s stupid, it’s for no reason yeah. It shouldn’t be there. 

Same with anxiety, it’s still a thing too.

He was very aware of his emotions and how they had begun to change when he is experiencing a concussion. Lily felt a significant emotional response to her concussion and tried to manage it by putting things into perspective:

I guess just kind of like, I don’t really feel anything. Like it’s kind of just a numbness.

Like I’m just kind of, life is happening and I’m just kind of there. That’s kind of what I feel. And then sometimes, like I’ll just start crying for no reason, and I’m like ’why am I crying right now?’. Like there’s nothing going on, like I have no reason to be like, sad. Like I have a great life, I’m in a university, playing a varsity sport – like I’m very privileged. Like why do I feel this way, kinda thing. Like, I don’t know, just a general kind of purposelessness.

With prior diagnosed depression before her concussion, Lily acknowledges that these feelings she is having are a direct result of her concussion. She is aware that her life is not one where she should feel sadness or distress, as she lives a good life. However, the heightened emotional state due to concussion causes her to feel otherwise and became difficult for her to manage.

Participants also spoke to the emotional challenges concussion posed on their lives in general. Due to the uniqueness of the injury, participants found it challenging to find other experiences in life that were similar. Tyler explicitly stated:
It was like such a shitty time in life, it’s just hard to get past that. I can only think of a handful of times where it was the equivalent of experiencing what I was experiencing. Like having to almost drop out of school, not being able to play sports, being isolated from your friends, not having the best relationships with your parents and stuff like that sucks.

The challenges that came along with concussion impacted all parts of his life. Unlike other injury, concussion creates challenges that participants have to cope with that they are often unfamiliar with. James felt similar about his concussion, and explained how recovery was much more difficult due to the emotional challenges:

... With the ACL, I was like okay I can’t play. Whatever, I’ve had like season ending injuries before, it’s fine. It’s like whatever. With a shoulder or a knee, or like your back or something, you do physio, and then you leave and it’s like ‘ow I hurt’. But either way you’re still there, like technically as a person. You’re more limited but it’s like a physical limitation, not a mental one. ... And like, but nothing is, nothing necessarily affects who you are. Not as much as a concussion does.

The mental difficulties caused by concussion were what made the injury stand out from all of the others he had experienced. He felt that he was affected personality-wise by his concussion unlike other injuries.

As participants slowly began to make sense of their injury, they realized the impact a concussion can have on their health. David often expressed concern for his long-term health during his concussion experience. He felt that it began to really put things into perspective for him. This influenced how he started to view sport in general and his career as an athlete. He explained:
I was kinda a little bit second guessing sometimes why I’m playing in the first place, because it keeps happening and it kinda makes you feel like, ‘is it worth playing a sport?’ Is it really that important to me that I’m willing to risk my brain health going forward? So I always wonder should I be trying to pursue [sport] anymore? Like I kind of probably made the decision that this is my last year kind of partially because if I’m done [university] [sport] I don’t wanna kind of pursue it if I’m not sure about brain health or worrying about reinjuring myself kind of thing. I’m not sure if it’s worth it so definitely when you have them back to back its kinda like, ‘pretty sure somethings wrong here. I shouldn’t be pushing it when it’s the second time back to back.’

His concussion history of five concussions in a non-contact sport is a source of stress for him, and he often expresses a fear of reinjury that could impact his life long-term. His experience made him aware of how bad concussions could be. Similarly, Kate also described how her emotional response led her to start reconsidering her sport career:

... It’s, like I get like overall just more emotional. And then on top of that, uhm, just it’s mostly frustration. Like any injury, frustration that you can’t play. And you start to think more about, like my career as an athlete and as a field hockey player, is that gonna be sustainable? I find that I tend to spiral downwards more because I’m more emotional because of the concussion and then because I’m like thinking all these things like ‘oh no I have a concussion’. So it was just kinda a really bad looped in cycle to be in.

The stress of thinking of giving up her sport caused her to feel frustrated, as all she wants to do is play. It put her into a state of rumination where she cannot move past the current struggle. Lily was also navigating a concern for her future and explained that it was due to the nature of the injury:
I don’t know like, broken bones and ligaments and muscles, it’s kind of an easier fix. Like your brain [pause] like concussions will affect you for the rest of your life. A broken bone won’t. So, it’s hard to know like, how a concussions gonna affect you because we don’t really. Every concussion’s different, so you don’t really know what symptoms you’re gonna have or how long you’ll see symptoms for. Whereas like, you break a bone, you put it in a cast, four weeks later you’re good to go. So, it’s a lot more complicated.

The uncontrollability of the symptoms makes for a big challenge in recovery. It is common for athletes to have a negative emotional response to their injury due to the lack of clarity in recovery as well. The awareness of how challenging concussion is and the detriment to health was evident in participant responses, and Rhonda’s concern for her health elicited an emotional response. Additionally, the fact that she did not cause her injury frustrated her:

I’d say right away when it happens probably a lot of, a lot of anger because I knew [pause] because I know that concussions aren’t good. I know that concussions kinda add up, like the more you have the worse it can get, and the easier it is to get more concussions. So I remember feeling kinda frustrated and angry, especially because I’m not the one who caused them, like someone else caused them. But I mean that’s only initially, kinda get over that. And then I guess over the recovery process, I would say a bit of anxiety that, I didn’t feel myself. And trying to [pause] like this constant battle of understanding what’s the concussion and what’s me. And it’s kind of a fine line, so I think that caused a bit of anxiety and frustration.

The uncontrollability of her injury and knowing that she did not cause it made for a difficult emotional experience. Coping with that and feeling as though she was not herself created
confusion, as she recalls feeling things that were not normal. In Carley’s experience, she described feeling afraid of her mind and a complete loss of control:

*How I explain it to people is – how I felt – is, you’re in kind of like a room and it’s like a box, and you’ve got you, yourself and you’ve got you your mind. And some days you yourself and you your mind get along. Y’all play board games, y’all are talking – like y’all are having a good time. And then there are some days where your mind just sits in the corner of the room and stares at you. And just like, watches you. Doesn’t say anything, just watches you. And you don’t know if they’re going to hurt you, you don’t know what they’re gonna do, right? But you’re just there hoping that nothing bad happens and that’s how it felt to me when I’d fallen into this sort of, pit of what I know now was depression. But I was scared of my own self every day because, I didn’t want this quality of life. It sucked, it was garbage.*

She felt out of control of her own mind and how every day went. The fear of the thoughts she would have during her experience was a severe reaction to her concussion and an example of depression during concussion recovery.

At times, participants felt a desire to be alone due to heightened emotional sensitivity. Sam’s emotional response to his concussion was one where isolation was voluntary, and he explained how he wanted to be left alone when injured:

... *Like when I’ve gotten them I think it’s made me depressed. In time like it makes you feel like, bleh. Like I get really depressed when I get one. It kinda just puts me in ‘I don’t wanna do anything’ sorta mood. Like, my head like kinda hurts and all I wanna do is just kinda lie in bed and I don’t wanna be bothered by anyone.*
He expresses a desire to be alone in his recovery, as he feels a sense of not wanting to do anything. Isolation does not always result in positive emotional outcomes and this will be further explored in section 4.4.

Participants depicted how their concussion was an injury that resulted in emotional difficulty throughout. Compared to other injuries it was an entirely different experience, and they struggled to find things that were similar in their lives. The heightened emotional sensitivity was a challenge to navigate, as participants recognized these emotions as not normal with injury. With concerns for their long-term health, participants often felt out of control of their symptoms and struggled to cope with this. Participants articulated how their concussion became a stressor that affected many areas of their life. All of these combined stressors resulted in participants having to navigate a difficult emotional experience with their concussion and the ways in which they coped with these experiences as well as the other stressors described above will be addressed in the following sections.

4.2 The culture of sport influences how athletes view concussion

This theme focuses on participant descriptions of the culture of playing through pain and injury in sport. Recognized as the norm of sport, participant’s perceptions of their injury were heavily influenced by this culture within their teams. Three sub-themes were identified, including (a) influencers that facilitate acceptance of the sport culture, which addressed how participants accepted the culture of playing through pain and injury as a result of various factors; (b) being injured is a sign of weakness, where participants described how they believed injury was perceived as being weak by themselves and others; and (c) injury is just part of the sport experience, where participants normalized injury and explained how it was just something that happens when you are an athlete.
4.2.1 Factors that lead to acceptance of sport culture

Participants were ingrained in a culture where pain and injury were normalized and described it as feeling it was part of their role as an athlete to accept this. Factors that influenced their acceptance of the culture included: injury as the standard in sport, seeing others injured, a desire to be successful and impact on performance in sport. This culture influenced their perception of their sport, self and concussion. Carley described her sport as “signing a social contract” when she began participating:

*It was just that idea that like, to not accept the pain or to whine through it was a negative thing. So if you wanted to like succeed in this and excel in this sport you had to toughen up. You had to like accept that this – the moment you walked into the gym you’re like signing a social contract. You know what I mean? Like that’s what it was. So I would say like, the culture of like sports in general but my sport perpetuated the idea of ‘no pain, no gain’ and the moment you stepped into that gym, it was, you sign that social contract every day. And that’s what you had to do.*

Watching other teammates being punished for injury also played a role in her understanding of the culture:

*I mean, I think because you watch your teammates you know, older than you, falling all the time and for your coach to respond to you as well in a way of, ‘you fell on your head go do rope climb’ rather than ‘are you okay?’ I think I just kind of felt like the concussions were not [pause] even so a concussion. Right? I just felt like it was just, you’re falling on your head.*
The acceptance of the culture for Carley was also rooted in seeing her teammates get injured and brushing it off by obeying the demands of her coach. This clouded her personal perception of what concussion was when she experienced the injury.

The desire to be successful in sport and continue to perform was also a priority for participants in their descriptions of injury understanding. Sam explained how he pushed injuries aside to advance in his career:

_You know, that’s your mind set and so, something like ‘ah, I just hit my head, holy crap I got a concussion, I know I do.’ Or like, ‘ah my hamstrings kinda tweaked,’ like you know and just play through it. That’s kinda like the mindset, it’s like just go, go ,go, and you kinda just wanna do whatever you can to keep yourself in like a good position going forward really. Like you don’t want your coaches to know that somethings wrong with you and that sort of thing. You know? Unless its, unless it’s life threatening – keep going._

While acknowledging injury exists, the desire to put himself in a good position career-wise is more important. His perception exemplifies how he accepts injury as part of the game and to push through when it is non-life threatening. Sport is the main priority in his life, and he sacrificed many things to play at a competitive level consistently. He explained how this experience directly influenced how he treated his concussion:

_Yeah. And so like, I’m not ungrateful or bitter about it, it’s just that its like [pause] when you’re 16, 17 and you’re going to sit on a plane and a bus for six hours a day. And your friends are going off and doing whatever you know, it kinda makes you feel, ‘is what I’m doing worth it?’ And so that’s why when you do get stuff like a concussion, where you still feel like you can play, you just push through it because, you know at that point, what_
else do you have if you can’t play? Do you know what I mean? Because that’s really all you know at that time. So I think that’s why a lot of people do just push concussions back.

Making sport a priority requires personal sacrifices and any injury is then viewed as less important in the trek to be successful. Being in the culture for so long, Sam had gone through a process of accepting how injury is treated as less important and normalizing it. He does acknowledge the limited information available during recovery, which will be further explored in section 4.4.

With a desire to be tough and strong, participants also viewed their concussion in relation to sport performance. For Lily, when she was injured she considered how it might impact her performance. Often, this meant pushing injury aside:

> Like, even with injuries that like aren’t concussions like, I don’t know, like I guess the idea of [sport] players to be like tough and strong and push through things – like we’re all in pain on the field essentially and – but we keep going so yeah, there’s definitely a lot of pressure to just kind of like, push injuries aside and just keep playing through them, especially in the varsity season when it matters. Just to kind of ignore them and if they’re not like that bad I guess, like if they’re not totally inhibiting your ability to run or throw a ball so, yeah.

As long as you can still perform and play your role on the team, you can ignore your injury. This acceptance is also perpetuated by the notion that playing sport results in being in pain. In order to be an athlete, participants viewed it that you have to tolerate the pain and push through for the betterment of the team.

Participant acceptance of the culture within their teams is evident in many ways. By viewing injury as the norm in sport, seeing others view it as something that is not of concern,
focusing on advancing their career and gauging injury severity on the basis of performance, participants described full acceptance of playing through pain and injury. All of these factors played a role in how participants understood their concussion. With this culture ingrained in their minds, participants questioned how catering to their injury became a sign of weakness.

4.2.2 Being injured is a sign of weakness

In their descriptions of concussion experience, participants often alluded to injury in sport as a sign of weakness or lack of loyalty to their team. They were afraid that if they took the necessary time away when injured to recover that their teammates would see them differently. They felt that they have a role as athletes and do not want to forfeit the image that they are tough and willing to make sacrifices for their team. In David’s experience, he felt that he should be making all necessary strides to come back to his team. He explains how these feelings influenced his thoughts about his concussion:

*I personally didn’t know [pause] how to feel. It’s a new experience and I didn’t know, uh, how hard I should be pushing to try and get back to [sport] because I knew I didn’t want to let my teammates down and it was coming to an important part of the season and I wanted to play super bad so, it was kinda that one side of me saying ‘okay, come on get back quickly ’cause you’ve got a team to get back to’*

He had not experienced a concussion before and was grappling with trying to understand his injury. Above all, he wanted to come back to the team and push through his injury. He also describes that the influence of an “important part of the season” played a role in his feelings of wanting to come back as quickly as possible. Tonya had a similar experience, where she perceived her coaches perspective and the team culture to be that you push through adversity, including injury. She explains her understanding of the culture on her team:
I did, I felt that from my team, I think. ‘Cause like my team was super competitive and we had the attitude that we’re the best and if you’re not good enough you know, go away. Like, if you’re weak and you’re like taking too much caution, like hey you don’t belong here. So I kinda felt that pressure from my team and my coach ‘cause they were all kinda that culture. And that mentality and attitude. So, I definitely wanted to like just, like you know, ignore it like, ‘yeah I don’t have a concussion, what’re you talking about? I can wrestle anybody.’ And even though it hurts you know, don’t show the weakness you know, keep doing it. So that was pretty hard in that way, so yeah.

While the pressure was not explicitly stated in her coach’s conversations with her, she still felt it due to the culture that was perpetuated. While she did not ignore her concussion and play through, she questioned if she should be doing it, as she felt that it would result in appreciation from her coach by conforming to the culture. Tyler felt appreciation from his coach and team in how he managed his injury. When he conformed to the culture they perpetuated, he feels that this was to his personal benefit:

... I guess not that supportive that’s for sure. ... I can just remember sitting on the bench for a bit and just being like ‘woah, I need, I need like a minute’ [laughs] and the coach being like ‘hey let’s get going in the game’ right? And same with the teammates, there was almost like a pressure by teammates to return to action and I guess it was like kind of normalizing it. ... I guess I just didn’t think much of it in a sense. … It might have been in part due to my willingness to return to play in a sense and I guess I didn’t think of the severity of concussion at the time and I didn’t think it was like that serious of an injury. I guess I didn’t really hold it against any of my teammates or my coach.
He took accountability for his decisions in trying to return as soon as possible, but it is evident that the culture here influenced his decisions. It influenced him to downplay the injury severity to himself and make attempts to come back. He did not hold it against his teammates or coach despite how they normalized playing through pain and injury. In a way, he accepted the culture of sport. Lily also accepted the culture and talked how she actually enjoyed it:

_Honestly like, I do, I like that kind of culture. Like I think it’s made me a strong person just to kinda like live through that and kind of like, I guess just know that even like if you’re in pain or hurting you can always keep going, you can always try harder, you always have more to give. But I can see the other side of it, like you probably shouldn’t just ignore all of your injuries and keep going, like your health does matter. Mental and physical health, so, I can see the other side of it. But as a [sport type] player like, that’s just kind of what we do._

She describes the culture of playing a role in developing what she perceives to be toughness in sport. When viewed that way, she sees it as something that is positive for her personal growth and development as a person. However, she does acknowledge the other side when she considers her mental and physical health, indicating that she is aware of the negative implications of it.

Carley’s perception of the culture is one that emphasizes risk taking and how you accept it as an athlete. She explains how it played a role in her sport and life:

_So, there is that culture. It’s just almost like, no pain no gain, you know? ... I think once you adopt it in the gym like the moment you step foot in the gym, the first thing you’re thinking is like, ‘things could go horribly wrong today, and that’s fine.’ Right? You are anticipating, obviously a good practice, but at the same time knowing that I’m putting myself at risk, you know, the moment I come into this gym. And adopting that into your_
own personal life, putting yourself in the position to be doing stuff that obviously isn’t necessarily good for you. Not like going out and doing things as a young kid but just, like I said, staying up late and you know, just being so hard on myself when it came to school work, school in general. Anything like that. Yeah, it kinda takes over your life a bit, yeah.

She describes the culture she experienced as “no pain, no gain”. In her experience, she believes that when you become an athlete you have to accept the culture in order to be successful. In a way, your success becomes dependent on your ability to endure pain and injury.

In sport, weakness is not something that is normal or accepted. Participants expressed how this was evident in their experience with concussion, as they feared being seen differently by others, focused on retuning to sport as the priority, and felt pressure to come back to sport quickly. However, in the broader scheme of their sport career and growth, participants also saw how the culture was a positive for them personally. It became clear how the team culture influenced perception and subsequent behavior for participants in their concussion experience. Avoiding perceptions of weakness from others by being tough in sport is a key way that participants continue to accept the team culture in their experience with concussion.

4.2.3 Injury is part of the sport experience

Participants had a history of other injuries in their sport and often described injury as something that was a part of the experience of being an athlete in competitive sport. In her experience, Moriah felt that the awareness surrounding concussion was limited and not prioritized in sport. She explained how she felt that performance was the priority:

*I feel like concussion awareness is not something that people like tend to prioritize in sport. It’s usually like get out there and do it and then like even if you get hurt they’re like ‘ah, a concussion, whatever’. ... And I feel like you feel this sort of responsibility like, to*
The importance of concussion in general is downplayed in her experience. In the event that someone is concussed, it is not taken seriously. She also felt that in sport there is a responsibility to sacrifice your health and wellbeing for the team, as it is part of your role as an athlete. Sam accepted the culture and conformed to it because of his strong desire to continue developing at a competitive level of sport. He explained how he put his desire to continue playing sport over his concussion recovery:

... He said I shouldn’t play for about a year, realistically. He said you need to take a year off of contact sports. I was like ‘fat chance man’, I was 15 at the time, 16. ... I ended up like, a month later signing for [team name] again and then started playing. And for the first two months of [team name] I told one of the physios and I said, ‘keep this is a secret, this is my worst concussion. This is what happened.’ And they were like, ‘you shouldn’t be playing at all’. And I said ‘I know I shouldn’t be, but like I wanna play. I wanna keep progressing.’ So for about two months I wouldn’t head the ball [laughs]. Like everytime I would just shoulder it or something.

He made small changes to how he played in order to continue playing and avoid making his concussion worse. A desire to play and continue developing were his priorities over concussion recovery and rest, despite what he was advised to do. His acceptance of the team culture played a role in his actions, along with his desire to play at a high level. In Carley’s experience, she recognized how others did not take concussion and injury in general seriously unless it was something that had directly affected them. She explained how she viewed this:
In [sport type] I would say, they’re there to support you just in the way that they’re just checking into make sure you’re okay but they’re also just looking at it like ‘yeah this shit happens’, right? It’s normalized. There’s no emotional connection towards it. When I broke my thumb it was just like ‘when are you coming back? When are you starting training again?’ I think that was the whole thing. ... With the teammates in [sport type], they were really supportive. And I think it’s because a lot of them had suffered the same consequences of the unsafe environment.

She felt that support was not genuine as the culture of the sport played a role in how teammates treated her. When there was a form of understanding based on experience, she felt that they were more supportive. Sarah also explained how there was support available but you just had to go and seek it out. She explained how the culture of sport had an influence on this:

They’re all pretty good – a lot of us kind of just keep things to our self though. It’s kind of just, I don’t know if is just the kind of person who plays [sport] or its just how the community kind of goes but – I’m not saying your close friend or something – I mean, people ask how you are and it’s kind of like a surface thing. It’s not like ‘well actually I’ve been rather emotional today’ you know? What’s that gonna do like other than make someone be like ‘oh okay’. So, people do ask, at least now more so than before. It’s kind of how much support that you ask for from them, they will try to give you. But a lot of the time, it’s kinda just keep it yourself and deal with it. It’s kind of how it’s been in [sport] for a long time and I think that stigma has kind of stayed a bit. Even though people are – especially your teammates and stuff – I mean your coaches aren’t parents, they’re not gonna hold your hand and you know, pat you on the head when you’re crying, that’s not their job anyways. So you don’t really expect that from them, for any kind of injury.
There is a clearly ingrained understanding of dealing with your injury on your own and coming back when you’re ready in her description. The team culture likely plays a role in this perception as she describes it as though injury is normal and it happens, so as an athlete you just accept this. The normalization of injury appears to be present in her experience. James also spoke to support in relation to the culture on his team. In his experience, he felt that the acceptance of the culture was good for support in a way. He explained how injury was viewed on his team:

*Its like the one thing is we have so many injuries that like, when you have any injury, everyone understands – everyone’s had it, everyone’s missed like seasons for stuff. Its not an exception. Rather its like ‘oh I did this’ and its not like ‘[gasp] really?’ It’s like ‘yeah I’m super concussed’ and its like ‘oh, that sucks’ [laughs]. It’s like ‘I remember when I did that’.*

It is clear in his description that there is a type of understanding and normalization of injury. Everyone on his team has experienced a bad injury or a concussion and understands what it is like to be injured. This excerpt can be understood as potential positives of the culture of playing through pain and injury, as well as normalization of injury.

The normalization of injury is clearly exemplified in participant experiences with concussion. Sport success was held as a priority and how others in their sport treated injury played a role in participant’s perception of injury. While they often expressed awareness of the dangers of injury, as athletes they had to continue to be tough and resilient because that was just something they had to do; it was a standard they had accepted. Understanding participant perceptions of the sport culture and how it exists on teams is important as it influenced how participants coped with their concussion, evident in the final two sections (4.3 and 4.4).
4.3 Distractive coping facilitated positive reappraisal

This theme addressed how participants utilized forms of distraction (i.e. school, hobbies, social activities) to manage their concussion-related emotions. Being active in their lives despite limitations in what they could do helped participants to avoid states of rumination resulting in negative emotional states. Three sub-themes were identified, including: (a) “I think doing some things is necessary”: distractions to manage concussion, which included descriptions of how participants engaged in various activities to distance themselves from the difficulty of their injury, which lead to (b) reappraising concussion and seeing opportunities, where participants began to view their injury differently and saw opportunities for growth throughout the experience, allowing them to see, (c) new perspectives on sport and life, which included how participants recognized new opportunities they had after their difficult experience and how it shaped the life and outlook they have today.

4.3.1 “I think doing some things is necessary”: Distractions to manage concussion

Participants were limited in what they could do during their concussion recovery, which made it difficult for them to cope with. A way in which they managed these emotions was by attempting various activities and making adjustments to their lifestyle to be able to still be active in life. They utilized school, various hobbies and social activities as a way to distract themselves from their concussion and avoid rumination on their current state.

Meeting school-related goals served as a way for participants to feel better about their current situation and feel a sense of accomplishment in this area of their lives. Distractions in the form of school helped participants to begin to accept their injury and shift their focus. James describes how he utilized school-related goals as a distraction:
Just kinda dealt [pause] I don’t know. I wouldn’t say dealt with it too well, but I didn’t really do anything to deal with it I guess. I just spent all my time focused on school.

That’s what I usually do. ... I was like ‘okay, if I’m gonna do something, I might as well do something good’ And that was like, yeah. So it was kind of a distraction.

With the loss of sport, he had more time to focus on school. While it was challenging, he perceived a focus on school as something productive and good to do with his newly available time. He utilized goal-setting to be productive in school during his recovery:

Yeah, and so in second year I got one percent off Academic All-Canadian, and I was like “well last year I wanted that”. ... Yeah, it was good, but it was – yeah. I’d set a bunch of good goals for myself at the beginning of the year and I ended up hitting them which was good.

He recalled a previous goal he had for himself that he missed out on and utilized this as motivation to achieve it this time. When he reached all of goals, he felt a sense of achievement and it separated him from ruminating solely on his injury. Tyler also utilized school the same way, shifting his focus from training for his sport to doing school work. He explained how it was a positive in his life at the time:

I guess I just used school as like an outlet. So instead of training for, say like, whatever, three hours a day, I’d spend that time reading or you know, like I’d spend it studying or writing a paper. I was like ‘yeah this is a cool kinda outlet’ and it was something I really enjoyed ...

Replacing the time he usually trained with school became a positive experience for him. He began to realize that he enjoyed school and it helped him to overcome the difficulty of injury.
Similarly, Tonya used the concussion as an opportunity to persevere through adversity and reach goals in school, even with a setback:

*Yeah. I was still able to do stuff. I’ve always been a keener, so matter how much it hurts I just wanna get those good marks, so like whatever. So I always kinda fought through it so, that wasn’t, that wasn’t new to me.*

With the limitations their concussion posed, participants often felt that they were unable to do anything besides sit and wait for their injury to get better. They found it helpful to begin to do things that were still easy despite having a concussion. This helped to fill the void of missing sport. In James’ experience, he felt that he ruminated a lot on his injury and wanting to be better. He explains how doing other things helped him to overcome this:

*I think the thing – my issue is that I spent so much time trying to force it to be better that it just like – yeah, I don’t know. I guess the less you think about it, the better off you’ll be. So the more distractions you have. So that’s the one thing that I guess could help people is just like – I don’t know how you distract them [laughs] but if you give people things other than like just their head to think about. ... The best thing for you is just go, have fun and like just try to stop thinking about it.*

Despite his desire to return to sport, he accepted that he had to give his concussion time to heal so he could return when he was fully recovered.

Having an active life despite injury setbacks was helpful for participants in recovery. Kate also described how she shifted focus to other things she could do when she was injured that were not in her sport. She took small steps to address symptoms which held her back from everyday tasks, and found new things she could do. She explained how shifting her focus helped her in recovery:
I think, I started to get better with my past concussions when I took medication to reduce my headaches. And so I was able to do smaller, small amounts of things. And I think from there I got better much quicker. ... You have to think about other things. I started playing the piano and the guitar, and I got back into drawing and juggling even though that’s like very, like, visual. It was probably silly but all of those fun little party tricks that you can’t do. You just have a lot of time to work on like kinda mindless things. ... I think doing some things is necessary.

Taking herself completely away from everything was something she recognized as personally ineffective for her. By shifting her focus to things that she was able to do outside of sport, no matter how small or big, Kate was able to adapt to being away from sport. James also shared the perspective that the key to his concussion recovery was still doing things despite limitations. He described concussion as “doom and gloom” and felt that by doing things he was able to avoid falling into that mindset:

  It’s easy to fall in because you’re tired all the time, you’re out of it. You technically gotta pick something to do. ... I think the biggest thing with my concussion is like realizing, it’s like okay, it’s time to have fun [laughs]. The thing is, there’s a lot of doom and gloom when you can’t think straight ‘cause it’s just like, okay I wanna do sports, I wanna do this, I wanna do this. And it’s like no, no, no, no, no. You know what, I’m just gonna do it [laughs]. Like its fun, it makes me happy, cool. Yeah.

He felt constricted by what he could do in his concussion recovery but it came to a point where he just decided to go and do what he wanted to. By doing different things, James was able to avoid falling into states of rumination which he recognized to be counterproductive to recovery efforts. Rhonda took slow strides in getting back to a normal lifestyle, and also felt that it helped
her in recovery:

\[ \text{I think that was hard as physical activity helps me get over things and process things and so I couldn’t really do much physical activity, at least in the first few weeks after the concussions. It was a bit, that was definitely frustrating. [pause]. But yeah I guess getting back, slowly getting back into things and you know after making adjustments such as like moving offices and things like that and you know seeing, seeing that things slowly progressing back to something normal, just really helped. ... I think I kept moving forward which I think is the important part, so. I never felt like I was stuck.} \]

As she made adjustments to her life to accommodate her concussion, she found that it helped her to cope with it. This served as a distraction for her in the sense that she could still try to live as normally as possible when she made small changes. When participants were able to see things progressing normally they felt better about their ability to overcome the injury and return to sport soon.

Participants utilized various distractions to cope with the limitations they were experiencing as a result of their concussion. By setting goals in school it helped them to feel a sense of accomplishment during their recovery, as well as being as active as they could in life, as it brought them closer to having a normal lifestyle and helped them to see beyond the setback of their concussion. These various distraction forms helped participants to begin to see past the negatives and being reappraisal of their concussion as an opportunity.

4.3.2 Reappraising concussion and seeing opportunities

Most participants’ initial appraisal of concussion was negative, as they focused primarily on the short-term negative implications it had for their sport season. Following adaptation to the situation through various distinctive coping strategies, participants were able to view their
concussion in a way that was positive. For Sarah, she focused on moving through the negatives of her concussion experience and its impact on her life. She explained how she did this and moved forward in a positive, productive way:

So, try to just kinda deal with it and [pause] being upset about things only hurts me. It doesn’t help it. So I try to, just kinda talk myself out of it as much as I can and if I can’t then, that’s okay, you just kinda gotta breathe into it and live in that. Being low or down isn’t the end of the world, you can still function in your life. Or if you can’t then you need to just go home and relax and trying to find some line of not encouraging it and not being mopey and living in it. But also not just trying to completely shut it in a little box ‘cause then it, that’s not a very productive way to deal with it either. So trying to find some line of, being okay with living in. And if I can, just put it out of my mind and try to make myself feel better, then do that too.

She acknowledges that rumination and focusing on the negatives does not help her in moving forward. This acknowledgement leads her to see past the setback and focus her attention on new ways that she can positively move forward. Evident in this quote, acceptance also had an element of self-kindness within it for participants to help them ease into moving forward with their lives. Kate was similar in how she framed her injury, as she described it as something that was difficult but it can be overcome:

... At some point life just goes on so you just kinda have to deal with what gets thrown at you and do what you can with it and try and be productive in other ways. I think with concussions, it gets especially frustrating because you can’t do anything and I was told to sit in a dark room and lie there basically for a whole summer. So, it can feel like you’re not doing anything and it can feel like you’re just sitting and wasting your life. But to
change that into like ‘okay I’m gonna go and I’m gonna lie here and this is gonna get me better. This is like going to training. I just have to suck it up, and it will actually like work.’ Look at it as if a thing that’s gonna help you instead of just sitting. Like turn it into something like that.

By turning her concussion into something that you can overcome, Kate found it to be productive and positive. With limitations on physical training, she felt that by describing it as a different type of training it enabled her to accept her injury and know that she is closer to returning to sport. Carley also utilized reframing and focused primarily on negative thoughts she had as a result of her injury. While it was not coping with her concussion directly, the thoughts themselves were a result of the concussion and by framing them in a different way, it was effective. She explained how this helped her:

*One thing my psychologist taught me, she says ‘just because you have a thought it doesn’t mean that it is’. So, she’s like ‘you may have a thought that you’re never gonna be the same and [pause] yeah, you’re gonna think that. You’re definitely gonna think that. But doesn’t really mean anything. You just thought it. Is it actually the truth? No. Will it be the truth? You have no idea, so at the end of the day, just let it be a thought and let it be just that, right?’ So I think that was one thing that really helped me, because I would have a lot of strange thoughts when I was going through that, like post-concussive depression. I had a lot of strange thoughts. So I think that was one thing – just letting thoughts be thoughts and not falling into a cycle of self-depreciation. And just learning that the moment you would ever intentionally say something negative to yourself, you have to cut that off right away. And that really helped, because it decreased the amount*
of negative thoughts I was having each day. And maybe it didn’t increase the positive but for me that was positive to decrease the negative.

By reframing the thoughts that she had as a result of her injury she felt much better emotionally. This form of positivity helped her to see every day that she would be able to move forward, instead of ruminating on all of the negatives. It helped her to accept things as they were and look to the future with a positive mindset.

Goal setting was also effective in helping participants cope. Tonya utilized it to focus herself on moving forward past ruminating on the difficulty of her injury. She explained how she overcame limitations during recovery to frame her concussion as a simple step to return to the sport she loved:

All the times I wanted to stay home when I couldn’t do anything, couldn’t read, couldn’t go on the computer or whatever, it was just horrible and brutal and I hated it. You just gotta cope with the fact that you gotta get better and then you’ll be able to do all those things right? So just have to look for that goal, the future I guess, you know? Like here’s the prize for what I am suffering now, you know? So, just think about that. You know, if I wanna get those things then I must suffer this now, just get over it. Yeah.

While initial focus was on all of the things she could not do, once Tonya started to adjust and accept that this was part of the recovery, she was better able to cope with these limitations. She reappraised her concussion recovery as an opportunity for growth in that she put her desire to play sport into perspective, and viewed it as the prize at the end of her struggle. This proved to be effective for her, similar to how it was for Kate.
Sam viewed his concussion in a different way, resorting to downplaying the severity to himself to cope with the difficulty. He explained how this helped him to overcome his injury experience:

*And I think, I think that’s good too sometimes. Kinda just to downplay the effect that it has on you. You know, ’cause I think if you can laugh at yourself, then you know, you can laugh at anything sorta thing. And I think like it just helps to, take away the stigma or like just break it down a bit so it doesn’t feel as serious to you if you can kinda just, make a, make light heart of it I guess.*

His way of downplaying it to himself was effective in coping with the emotional experience he had. Using laughter and reframing his injury as a challenge that he can overcome by not being so serious about it was effective in helping him to cope.

Reappraisal was effective for participants in helping them to see past the difficulty of their concussion and begin to consider positives. By focusing their attention on ways to move forward, reframing their concussion, using goal setting and even downplaying the concussion severity to themselves, participants felt better about their ability to overcome their concussion. These forms of reappraisal led participants to develop new perspectives both on their sport and lives, which resulted in a positive mindset moving forward.

### 4.3.3 New perspectives on sport and life

As participants were recovering from their concussion, their reflections on it turned to positives as they accepted their injury for what it was. While it was a setback in their career, participants were able to find new perspectives of it that were positive. Tyler’s concussion ended his sport career and at first, that was very difficult for him. However, he used school to cope with his concussion to begin with, and it turned out that it helped to shape his future. He explained:
... Once I kind of came to the realization that sport might not be the best thing right now in terms of my life, I wanted to focus in on school and stuff. I think I was kind of maybe able to look at it as an epiphany as I mentioned, like, maybe this is for the better. Like now I can focus in on school ... It let me see life beyond sport, which is awesome. ‘Cause I wouldn’t be where I’m at today without having experienced that injury to an extent. ... It made me realize that there’s more to life than just sport and I think sport can be a beautiful thing but can also suck like that too.

He first had to come to accept that sport was not a long-term career for him, which led him to begin planning for his future. The reappraisal resulted in Tyler seeing that perhaps it was for the better as he did not have previous plans to pursue a professional sport career. While the injury itself was not positive, the implications it had for their lives were positive. David explained a similar view on his concussion experience, and for him, it resulted in him appreciating sport more than before. He explained how this new perspective helped him to value sport more:

   And I think I kinda look at playing sports as a, kind of privilege that can be taken away so quickly. So it’s kind of like enjoy it because an injury can take it away from you so quickly. The sport might not always be there for you, that’s kind of another thing that I thought about because before, it’s all I knew was playing sports. So now I know that it’s gonna end one day kinda thing, and I know what it’s like to not be playing. So I think it’s good for me in that sense that to know that there’s more to life than just the sport sometimes.

Upon reaching the level of being a student-athlete, participants all had an investment in their sport. They often made social and personal sacrifices to be successful. As David explained, all he knew was playing sports. Once it was taken away as a result of an injury that had so much
uncertainty, he had the opportunity to see how sport may not always be available to him. The concussion experience provided him with new perspectives and appreciation for the opportunity to have sport in his life. It also showed him that there is a life beyond sport and it is not everything.

After overcoming their concussion, participants were able to look back on it as more than just another injury. It provided them with the opportunity to help others in the future who experience the same thing. Sarah explained how she felt that the knowledge she gained from the experience was to the personal benefit of herself and others:

*I think it’s made me more compassionate and understanding to people that are going through a similar thing or other things that may parallel this. My significant other has suffered from concussions and I think having that bond has, will end up being really good in us helping each other through it and dealing with that. It’s hard, ‘cause you always just think ‘oh well, but I would’ve been better if I wasn’t concussed’, it’s just all like, ‘how is this a positive? It would’ve happened anyways.’ But, that’s not really how life works, so I think, it has made me more compassionate towards, sort of, conditions and things like this that people are going through and I mean I don’t take my brain for granted anymore. I think it has made me rely more on things that are less surface and vain in my life, like grades or my athletic performance or this and that. Like if you have to be able to hold onto something if you can’t hold to ‘oh I get straight A’s’ or I have to hold on to trying to be a good person and what I’m doing in the world and being kind and nice because that’s not something that a concussion can take away from you. So you have to kind of build that strong sense of self and I would say that would be a positive.*
The ability to connect with others by way of experience was valuable for Sarah, especially the connection she now had to her partner. However, the injury is still challenging as it is easy to get caught in a state of rumination. She navigated this by accepting that the injury happened and taking the appropriate steps to move forward. This helped her to overcome her injury and also appreciate different things in life she previously had not paid mind to.

Positives were gained from the experience, as participants had perspectives that were rooted in optimism and appreciation. They began to see a life beyond their sport and also expressed more appreciation for it they previously had not seen. The benefits both for themselves personally and as an athlete helped them to be more hopeful about their lives.

4.4 Concussion recovery is difficult with limited information

*That’s exactly what it is, you never wanna feel alone, ever. That’s not something that I don’t think humans go seeking out, you know? Looking to feel alone. You may want to spend time alone or do things alone but you’re not looking to feel alone or lonely, right?*

- Carley

This theme explains how participants were often coping with having very limited information about their concussion from medical professionals and little access to information. This led to difficulties in coping, as participants could not decide what was best for them. However, the support of others who understood concussion by way of experience was effective in helping participants to manage emotions around their difficulties. Two sub-themes were identified, including (a) implications of misunderstanding of concussion by self and others, where participants described how their perceptions and understanding of their injury were often misinformed, resulting in difficulties coping. This was related to (b) importance of support from
people who experienced concussion, where participants leaned on the support of teammates and friends who understood their injury and provided them with the support they desired.

**4.4.1 Implications of misunderstanding of concussion by self and others**

Participants struggled with understanding their injury due to lack of information from medical practitioners and team athletic trainers, as well as limited access to reliable information. Thus, they felt they did not understand their injury very well and how best to cope with it. Throughout her entire experience, Carley struggled to understand how to cope with her injury. She explained how having information at the end of her recovery from a psychologist was helpful and would have been beneficial throughout:

_I think resources like that because I was able to more understand what I was going through. It didn’t solve everything for me but it kind of took away the nebulous of what a concussion was and if we were to have that here or just easier access. ‘Cause the only way I got access to that was literally crying to my doctor about it, right? I wasn’t able to walk in anywhere and say ‘I’ve just had, I have a concussion and I just, I need help. I need you to explain to me what I’m going through and what I can do physically, to like prevent me from feeling this way.’ So I think like, yeah the greatest things that looking back on it that I wish I had was just like some sort of empathetic like set of ears that were able to give me better advice. And a resource to educate me on what I was experiencing. Because when you have a concussion and you’re confused and you can’t explain it to anybody, it’s the worse feeling ever._

The disconnect between what she was experiencing and her ability to explain to others was challenging on top of all of the stressors of injury. In Kate’s experience, she felt that despite her teammates knowing she was concussed, they still did not fully grasp and understand what she
was experiencing. She explained her perception of what her teammates thought of her when she was concussed:

Well I think especially when I was rooming with my best friend she, all she sees is that I’m upset about not playing, when I go back and I lie in my bed. But I’m trying to stop the world from spinning ’cause I’m so dizzy. You know? But then I’m not great at communication and her focus is more on ‘oh, like you’re upset because you’re injured’. Whereas like I’m actually like, spinning and [laughs] feeling very sick, like I’m about to vomit. And, part of that can be fixed by me communicating but I think that’s kinda one of the main problems when I had my other concussion. Like people are understanding about injuries. They recognize that concussions are a very serious injury but when they kinda get longer it’s hard when you see people with concussions doing things. It’s like ‘okay well you can do things or can you not?’ People get confused about that I think.

The invisible symptoms of concussion pose a challenge in helping others to see how difficult it is to manage these aspects of the injury. Kate emphasizes that she could be better at communicating as people do take concussion seriously, but this line is blurred when people see concussed individuals doing everyday things. However, as she described in section 4.3.1: doing some things is necessary to cope with missing out on sport.

The length of recovery is also unknown, which is another stressor for athletes when concussed. In Tonya’s recovery, she found it difficult to know when she was recovering due to limited information she was given and lack of prior knowledge. She explained how she navigated this:

... There were times that I just didn’t know if I was recovering or not. Like, how do you decide that? Like am I recovering, am I able to go watch TV now? So it was just trial and
error right? Go do it, if it hurts then, oh, don’t do that right? It’s probably sometimes not the best way to find something out if you’re recovering or not, so it would’ve been nice maybe a way to figure out if you’re recovering or not, you know? And how to determine that to learn that, so.

More information from medical professionals would have made this much easier for her to cope with, as opposed to trial and error to figure out if she was recovering. It becomes difficult for participants to know if they are able to go back to sport participation.

By starting at the very beginning and understanding the injury completely, participants would have been better able to appraise and cope with it in a productive way. David’s misunderstanding of his injury put him in a state where he expressed concern for his long-term health. He explained how he navigated trying to understand his injury and manage his fears:

I wouldn’t say panic but kind of just [pause] unsure of where to go next at times and kind of – not lost, ‘cause I had some direction from trainers and stuff. I personally didn’t know [pause] how to feel, it was kind of a new experience and I didn’t know how hard I should be pushing to try and get back to [sport] because I knew I didn’t want to let my teammates down and it was coming to an important part of the season and I wanted to play super bad. So, it was kinda that one side of me saying ‘okay, come on get back quickly ‘cause you’ve got a team to get back to’ but then another part was kind of hesitant ‘cause I’d never experienced it before so I was kind of scared. I didn’t want to rush back into it and have long-term effects kind of, so I was kind of in between. I didn’t know – I didn’t know what I should be doing necessarily. ... I didn’t wanna let down my teammates and I didn’t want to miss out on the opportunity for myself too ‘cause it was probably the only time I could play in a National tournament while I was still playing
ball, so I didn’t know what I should sacrifice kind of thing. My long-term health or just the chance of playing in that tournament that I’d never be able to play in again so.

There were many factors influencing David’s thoughts towards his injury. He was unsure of the best decision to make and also described pressure from himself to perform. It is possible that the culture on his team influenced this pressure he put on himself. With more information available, David could have been able to navigate his experience easier. He did have support of the trainer though and throughout his experience, it was key to him overcoming his concussion. The trainer acted as a person to go for when he had questions or concerns, helping him to validate what he was experiencing. In Tyler’s experience however, he also felt he had very little access to information and was withdrawn from his teammates. He described what this was like for him and how he perceived it:

“I just remember it just sucked. Like, I basically had to lock myself in like a room essentially, and just like chill until I felt it was okay. So like I wasn’t going to class, I wasn’t practicing. Yeah I was basically a couch potato doing nothing. Because I couldn’t read, I couldn’t watch TV ’cause the light hurt. I couldn’t really do anything. Like it sucked, yeah. ... That was one of the things I didn’t really like was the symptoms. ... I was just, essentially locked in a dark room, just (laughs) being like... (laughs) yeah, what’s going on? It was just really weird, I just didn’t know how to cope with it and like what to do.

Instructed by medical professionals to rest in a dark room until he felt better, Tyler found it challenging to understand what was happening to him at the time. He was also away from all of his teammates and friends due to the limitations and it was difficult for him to adapt to.
There were times when participants felt that no one understood what they were experiencing and they did not provide support for them. Moriah explained how she was left completely alone, unsure of what to do with no support from anyone:

\[ I \text{ don't think he really had any concern for like [pause] my well being. Or like at all, or any concept of it. Or like he was the kind of coach who like, like I think he thinks you were faking it. So he was just awful. But yeah he’s like ‘no you’re fine, come back’ and like, but I don’t think I am. Yeah, so then you’re kind of just [pause] I found at least with me, I was left to like, deal with it on my own. Like I kinda just like spent my time in my room in the dark, like no one came to check on me. Like no one like asked me like, how I was or like how I should be feeling at like kind of like that point in recovery or whatever. And like to my knowledge, that was the first one that I’d had so I was like ‘oh I guess I’m just like I’m just supposed to stay in the dark and like hope for the best.’ Yeah, so it’s not, not good. ]\]

She speaks to the struggle of her not understanding how to cope with her concussion and how the lack of care from her coach as well as others played a role in this. Feeling that they did not care impacted her perception of the injury, as she then felt that it was something she just had to try to manage alone.

Carley described how her other friendships suffered at the time of her injury. She described how she attributed it to misunderstanding and selfishness:

\[ So in that timeframe because people weren’t hearing from me they just kinda felt like I had just abandoned them and therefore they abandoned me. Because it’s just kinda like eat before you get eaten, sort of idea. ... And I think people don’t understand enough about concussions to wanna walk through it with someone. People are very selfish. Yeah, \]
especially when it comes to you know, you’re at this level of friendship and then suddenly this persons not giving you attention or hanging out with you and it seems like your level of friendship disintegrates or it falls, right? It declines and you know people don’t wanna feel like the burden is on them, right? They’ll find a way to blame it on you.

The support she desired was difficult to find from her friends that did not understand her injury. She felt that they did not want to make an effort to do so due to selfishness and attribution of blame.

Provided with little information the time of injury, participants struggled to cope with their concussion as they did not know what was best to do. They were unable to explain it to others and felt that this lead to misjudgement of the injury. They expressed fear for their future as they did not know what to expect, and also experienced isolation as well as limited support due to misunderstanding. In seeking support, participants often cited connecting with others who had experienced concussion to help them navigate the stressful experience of it.

### 4.4.2 Importance of support from people who experienced concussion

In experiences with support during injury, participants found it most beneficial to confide in someone who had also experienced concussion. It was common that participants felt misunderstood by others, while also attempting to grapple the injury personally. Limited information available to help them navigate their injury was a challenge, and having the support of someone who knew what they were going through helped. Moriah expressed her desire for this when she was concussed:

> I feel like that’s another thing that they should like tell you how to deal with like, if you know, if you’re feeling like this, maybe try this. Yeah, there was nothing. I just generally just remember [pause] just like being like, really really upset and not knowing how to
deal with it and then like, not having anyone to talk to about it either. ... So it would’ve been nice to like talk to someone, be like ‘oh yeah, like this is normal, you know people feel like this. So like maybe you should try, I don’t know, x, y, z or like going for like a short, short walk.’.

The stressors participants were coping with, such as limitations in their lives, could have been made easier by having someone there who had genuine information. Often, participants had very little information available to them when they were injured. For Carley, key to cope with the emotional experience of her injury was support from people who truly understood what she was going through. She explained how support rooted in common experience played a role in her recovery, and the importance of it in concussion recovery:

... A friend of my dad’s, they all play hockey just recklessly on Sunday nights, and he had a concussion. And he said it’s like being behind jail bars but you can’t see the bars, right? You just feel them. You just feel like they’re there but nobody else can see them, you can’t see them, you just feel them. For someone to say like ‘yeah I totally get that’, that was huge. I had a friend actually who was on the football team and he had to leave the football team because he had six concussions and I ran into him and at this time I was not doing well after that concussion and he said ‘hey like, how are doing? Like I haven’t seen you around much’ and I was like ‘yeah well, such and such transpired’. And he just sat me down and he’s like ‘let me talk to you because I don’t know if you feel the emotional effects but I get that’. And that just really did something for me in that moment because you feel very alone. ... I now have epistemic access to any area of life that some people don’t. I can talk to other people who have had concussions from a place of
knowing. Rather than from a place of theorizing. And I think that’s so important for people who will continue to suffer from concussions.

The importance of having someone there who understands the emotions of concussion was instrumental in Carley’s recovery. It helped her to not feel so alone in her experience, which participants described a common feeling throughout recovery due to the limitations but also the misunderstanding from others. She reflects on the role this played in her recovery and how she now has the knowledge and understanding of concussion which she acknowledges is very important. Sam also recognized how this support helped him navigate feeling alone in his experience:

I think that’s one of the worst things too, when you do get in like that kind of a head space when that sort of thing happens. The worst thing you can do is be on your own because then you’re just left with your own thoughts and it’s just like a downwards spiral and it just gets worse and worse from there. ... I think that really helped me big time you know, having friends who had experienced it and stuff just to talk to. Not like a support group but you know, you have supportive kinda friends around you and it’s like ‘oh, this is going on’ and they’re like ‘oh man I had that too, it’s brutal’. Like, ‘I know’.

Similar to Carley, he also acknowledges how being alone during recovery is not a healthy or good thing to do. Sam felt that when he was left alone, he would go into states of rumination that get progressively worse. The support of friends who understood helped to combat these feelings. He was a very competitive athlete, valuing sport over everything else in his life, so by having other people who understood the implications of injury was key to facilitating coping for him.

Injuries were often normalized in sport and, for participants, in some ways this was a good thing. It bridged understanding and helped participants to feel supported when they felt
alone in their struggle. James described his team as one that was understanding and knew what concussions were like since they were so common in his sport. He explained how his teammates helped him to manage his emotions and ultimately overcome his injury:

*Luckily I had lots of people I could be open with so they, they knew what was going on. It’s like ‘hey this is going on, na na na’. ... So I never felt like I wasn’t a part of the team anymore. The actual like, [sport] side of it was always fine. ... That was the one thing is everybody understands. Especially if like – I don’t know, if you say ‘yeah, I can’t do this’ or like ‘I’m concussed, this is what’s going on.’ No one’s gonna be like ‘oh, why aren’t you playing?’ Like there’s never that. ‘Cause like everyone knows a guy who’s done it, gone back too early, made it worse.*

He felt he could be open with people who understood what he was going through, and it helped in a way that injuries were normalized. He knew that he was still a part of the team even though he was injured, which was important to participants.

*It is clear that support from people who had experienced concussion was valuable to participants, as they were able to navigate the feelings they had and understand what they were experiencing. The support felt genuine and helped them to combat the feeling of being alone in their struggle and start to see their concussion as something they could successfully overcome.*
Chapter 5: Discussion

The purpose of this study was to explore emotional and psychological experiences of men and women Canadian student-athletes who have had sport-related concussions, and to examine appraisal and coping responses to these experiences. This purpose was explored through semi-structured interviews with 13 current or previous student-athletes, from individual and team sport. Key findings of the study included unique experiences of concussion, how the culture of sport influenced athletes’ views of their concussion, the use of distractive coping to facilitate positive reappraisal and subsequent engagement in other life goals, and how concussion recovery is difficult with limited information. Findings of this present study align with current research which identifies concussion as a unique injury in how individuals experience and report it. It supports the notion that the emotional and psychological aspects of the injury are of the utmost importance to consider (Elbin et al., 2014; King et al., 2014; Kontos and Reynolds, 2015; McCrory et al., 2017; Weise-Bjornstal et al., 1998). These findings extend our existing knowledge on experience of emotional and psychological aspects of concussion and how athletes cope with these facets of the injury. In the remainder of this section, I will highlight key findings regarding participants’ appraisals of their concussion experience, and how they coped with the various stressors related to their injury. Future research directions will be suggested throughout, and the final sections of this chapter will include practical implications, and the strengths and limitations of the present study.

To introduce and provide context for this section, I will provide a brief summary of the central findings. In this study, four central themes were identified. The first two themes focused primarily on participants’ appraisals of their injury. The first theme focused on participants’ descriptions of how they perceived their concussion to be a unique experience with various
facets that impacted their experience of it. Participants described the stress resulting from cognitive barriers caused by concussion symptoms. They citing timing of their injury as a key stressor in their experience, and if it occurred at a time that resulted in missing a big tournament, training opportunity or was perceived as a threat to future goals, they appraised it as a bigger challenge. They emphasized the difficult emotional experience associated with the concussion and the various stressors of the injury. Findings suggest that emotional and psychological experience of concussion varies for every individual that experiences the injury, and in coping with these aspects, various stressors should be considered. The second theme exemplified how participant perceptions of their concussions were directly influenced by the culture of playing through pain and injury. The individual cultures on participants’ teams also playing a significant role in their appraisal of their concussion. In order to be successful in sport, participants described how they had to adopt the culture of their team and subsequently conform to it. Various factors (i.e. others’ acceptance, desire to advance in career, and continue playing) influenced their acceptance and resulted in participants believing it to be part of their role as an athlete. They perceived concussion and injury in general to be a sign of weakness and stated injury was something that was just part of the sport experience, which resulted in participants accepting their concussion as a normal part of being an athlete.

The final two themes were related to the coping strategies that participants utilized in their concussion recovery. The third theme identified how distractive coping facilitated positive reappraisal. Participants explained how various distractions outside of sport (i.e. school goals, being active in life, returning to a normal lifestyle) were effective in helping them to manage negative concussion-related emotions. Distractions served as a form of attentional diversion. This helped participants to begin reappraising their concussion and see new opportunities in their
lives. This reappraisal also resulted in athletes gaining a new perspective of sport, where they expressed a new appreciation for the role it played in their lives. They also voiced an appreciation for life, beginning to see a life beyond sport. The fourth and final theme centered on the difficulties of their concussion recovery given the limited information available to them. The challenges of their personal misunderstanding (i.e. unable to explain and communicate to others, fear for future in sport) and significant others confusion (i.e. misjudgment, isolation, limited support) were voiced, with participants emphasizing the importance of having someone in their lives who understood the emotional and psychological challenges of concussion. Participants articulated that the best support came from a person who had also experienced a concussion, as this helped them to bridge gaps in understanding and combat negative emotions.

The following parts of this chapter will discuss the significance of these findings to current literature and theoretical constructs, as well as position how these findings contribute to the broader field of concussion research. Practical implications will be suggested, and various strengths and limitations of the present study will be addressed. Final concluding remarks about the study will be explained at the end of the chapter.

5.1 Unique experiences of concussion

Research on concussion in the sport context has emphasized the uniqueness of the injury and how each individual who experiences a concussion may cite different symptoms, stressors and emotions due to the individuality of the injury (King et al., 2014). This creates a challenge in treatment, as concussions should be treated on a case-by-case basis to best help individuals in their recovery (Collins et al., 2014; Kontos & Reynolds, 2015). Participants experienced a wide range of symptoms of concussion, most commonly: dizziness, headache, sensitivity to light and noise, nausea, and general body pain. Each participants’ experience with concussion exemplified
levels of individuality, as not all participants experienced the same symptoms and emotional response to them. However, the ways in which they coped with these unique challenges were very similar. Aligning with previous research, as some individuals experienced more severe symptoms, they experienced more cognitive difficulty (Elbin et al., 2013). The more symptoms participants experienced during their injury, the more emotional distress it caused as they were more limited to by what they could do in their lives. This resulted in the injury being appraised as an increasing threat to their goals and well-being, especially when they believed they could not do anything to progress their recovery. These findings support the importance of treating concussions on a case-by-case basis. Each participant was experiencing various stressors psychologically (i.e. decrease in cognitive function), emotionally (i.e. heightened emotional sensitivity) and socially (i.e. social limitations and isolation). Taken together, these stressors make for a difficult experience for athletes and demonstrate the importance of considering each concussion case individually, as they may be more difficult for some athletes as opposed to others. Moreover, these findings suggest that it is important for practitioners to consider these emotional and psychological barriers individuals experience when they are concussed, as these additional stressors add to the difficulty of the concussion.

The time of the competitive cycle when the injury occurred resulted in specific emotional difficulties for participants. This was often dependent upon which athletic goals were being threatened by their injury. Participants’ descriptions of these emotional responses in relation to injury timing supports Lazarus’ (2000) explanation of how specific emotions occur. When participants sustained their concussion, they assessed the situation in relation to their goals in sport and life at the time of injury. In the low competitive cycle, participants described how they were faced with challenges of missing training sessions to establish their position on the team,
personal performance goals being threatened and missing time in classes at school. When their concussion occurred at a time in the season where it was close to playoffs or exam periods in school (i.e. high competitive cycle) however, these difficulties were much more magnified. Participants describe the challenges of having to accept they would miss playoff games when their team needed them or national tournaments they had trained all year for. When these times in the season aligned with exam periods, they experienced much more emotional distress as they were then facing their school career being threatened as a result of concussion. These two together caused participants to feel frustrated and anxious about both their sport and school careers being negatively impacted. These findings suggest that it is important to consider the time at which an injury occurs when assessing an individual’s emotional state, as their response can often be negatively magnified by the concerns they express in relation to this stressor.

It is clear that participants appraised their injury based on how it benefitted and threatened their goals in relation to the time at which it occurred. Participants’ emotions occurred after an appraisal of the person-environment relationship (Lazarus, 1991). They appraised their concussion as a direct threat to their goals and well-being, and positioned it in relation to school and sport-related goals. Their concussion was aligned as either harm, loss or threat to these goals. Participants appraised it as harmful to current goals they had and threat to future goals in their sport and school careers. Evident in these findings is the importance of an understanding of the environment as it aligns with the well-being as well as goals of individuals. These considerations can help to understand emotional responses and experiences (Lazarus, 2000). All participants were part of a competitive sport environment and appraised their concussion in relation to the impact it would have in that environment. Thus, participants all appraised it as a threat based on the timing of the injury and the negative risk it posed to goals.
Throughout the process of appraising the threat concussion posed to sport-related goals, participants engaged in what is referred to as goal disengagement and reengagement (McEwen, Hurd-Clarke, Bennett, Dawson, & Crocker, 2018; Wrosch, Scheier, & Miller, 2013). During their concussion experience, participants were withdrawn from active engagement in the sport environment and confronted with athletic goal disengagement. For most participants this was very difficult to accept at first as they attempted to adjust to their lives without sport. However, they subsequently engaged in goal adjustment following their adaptation to the new environment. They shifted their focus from sport performance to different areas of their lives where they could accomplish things such as reaching goals in school and planning for their future beyond sport. By adjusting their goals, they were better able to manage the emotional difficulties associated with the loss of sport, focusing their attention on other things in their lives. These findings suggest that goal disengagement and reengagement should be considered in examining concussion experience.

The findings of this present study provide some support for Wiese-Bjornstal et al.’s (2015) conceptual modal of psychological response to sport concussion. Participants described various factors that influenced their appraisal of concussion (i.e. loss of sport, limitations in school, social limitations, time injury occurred, team culture, fear of being viewed as weak). Combined with the various symptoms they experienced, participants appraised their concussion as a threat to their goals in sport, therefore viewing it a negative. Their symptoms limited what they could do during their recovery, resulting in reduced quality of life, well-being and negative emotional responses. However, this model does not account for the threats to goals in sport, which influenced how they appraised their injury and the impact it had on their lives. This model has potential to extend understanding on psychological response to concussion in the sport.
context, but the appraisal as it relates to goals should be also be considered. The findings of this present study suggest that goal adaptation was crucial for participants to cope with the threats to their sport-related goals when they were concussed and warrants consideration in models such as Wiese-Bjornstal et al. (2015).

5.2 The influence of the sport culture

While one initial research question was to explore potential gender differences in athletes’ experiences and coping with concussion, this factor did not appear to be present in the data. In this sample, men and women participants exemplified many similarities in their appraisals of concussion, with differences seemingly more influenced by the individual team culture associated with the meaning of injury. Some participants described their team culture as one where they experienced pressure from their coaches to ignore their injury to return as soon as possible. Others described it as one where injury was accepted as part of being an athlete, and their concussion was treated like any other injury. One participant stated that he told the team trainer about his concussion but made him promise to not tell anyone about it so it did not inhibit his chances of playing. They accepted that it was normal to be injured and unless it was life-threatening it is not something that they should require missing time in sport. This supports existent literature that athletes are expected to play through pain in order to win, prioritizing victory over their individual health and well-being (Messner & Sabo, 1994; Sabo, 2004). The downplaying and fear of looking weak in sport was present in both male and female participants’ experiences. The findings of this study appeared to also support Young and White’s (1995) work, as both men and women participants engaged in forms of acceptance of the culture of playing through pain and injury, while suppressing emotional responses to their concussion. Caution is needed about assuming that playing through pain and injury was the culture in
specific sports itself in this study. Athletes voiced that there was a team culture that embraced this belief. The culture influenced how participants appraised their concussion when it occurred and throughout their recovery. Findings suggest that individual participant appraisals are influenced by the team culture and athlete’s beliefs that they should value sport above personal well-being and health.

Athletes struggled with the healthy recovery from the concussion injury, with many citing a desire to continue playing despite their concussion. They perceived that if they could still perform, their concussion is not a cause for concern. This supports literature suggesting that athletes often do not perceive their concussion to require serious attention and that it is appropriate to play through it, causing little danger to themselves (Delaney, Caron, Carrea & Bloom, 2017). In this study, two factors appeared to influence this behaviour. First, the culture of playing through pain and injury inherent within each of their individual teams creates tension in athletes’ decision making. Athletes voiced feeling pressure from others to play despite being concussed. They also embraced this culture as they felt it would result in others seeing them as tough and a contributing member of the team. However, they also mentioned knowing very little about concussion and in several cases, they did not know initially that they were concussed. Significant others around them also often did not know they were concussed which then lead to a lot of confusion surrounding their injury. These findings suggest that consideration of individual team cultures have a significant influence on athlete views of concussion and potential educational interventions could help to minimize incidents of playing through concussion. Future research should explore the potential implications of educational interventions on concussion experiences.
McCrory et al (2017) acknowledge the importance of psychological and sociocultural factors in sport, stating that they should be closely considered in looking at concussion prevention strategies. In their descriptions of their concussion experience, participants emphasized how injury is part of sport and to be a successful athlete they have to accept this as the norm. They also cited seeing others playing through injury and felt that they had to do the same in order to be a contributing member of the team. Due to the injury not being taken seriously and athletes becoming accustomed to this culture, it becomes difficult for concussion to be prevented, as all athletes are assimilating to these norms and discounting causes and prevention of the injury. Evident in the findings of this research, the sociocultural notion of playing through pain and injury has a significant influence on how athletes view concussion. These findings suggest that in order to help with concussion prevention, this culture must be considered. Changing the attitudes towards injury by communicating to athletes the importance of caring for all injuries, most notably concussions, coaches and medical professionals can potentially help to bridge the misunderstanding about the injury. Future research should consider the role of team norms as well as more general culture beliefs to examine if there are differences in the how men and women athletes appraise and cope with their concussions.

5.3 Distractive coping

How athletes cope with the stress of injury will influence not only their emotional states and psychological well-being but also their adaptation and recovery. A key theme in this study was the use of distraction coping to manage many of the initial stressors associated with concussion. Participants voiced that they often used various forms of distraction to divert their attention from the challenges their injured posed. They were told by medical professionals to rest and completely remove themselves from all activity until their symptoms were completely gone;
however, participants believed this to be counterproductive to effective recovery. For example, one participant said that he often felt his doctors focused only on what he could not do and failed to mention any other options of possible activities. This was an ineffective approach to recovery, as he found himself constantly ruminating on the negative aspects of his concussion when left alone with his thoughts. Although distraction coping may be maladaptive in dealing with a stressor that needs to changed, it may be beneficial when stressors, such limitations imposed by a concussion, cannot be changed (Lazarus, 1991). Distractions to divert attention away from the negative consequences and were effective in helping participants manage distress associated with their concussion and helped to overcome the challenges associated with it.

The concept of diverting attention is congruent with Gross’ (1998) model of emotional regulation, which he defined as “the processes by which individuals influence which emotions they have, when they have them, and how they experience them” (p. 275). Emotional regulation is an approach which aims to change emotional experience, often with a goal of reducing distress. Gross (1998) describes five forms of emotional regulation, one of which is attention deployment. Participants utilized forms of attention deployment, which includes distraction, concentration and rumination. In coping with their injury, participants describe various forms of distraction (i.e. engaging in school, hobbies, and social activities) which helped them to avoid ruminating on their concussion and the negative effects associated with the injury. Distraction in emotional regulation involves changing an individual’s internal focus, which can include instances of disengaging from goals that have become elusive and instead choosing to shift attention to goals that are now more controllable and manageable (Gross, 1998; McIntosh, 1996).

Participants were faced with many limitations during their concussion recovery and were unable to pursue sport-related goals which became a significant challenge to accept. Shifting attention to
goals in other areas of life and engaging in different activities helped to improve their emotional states. These findings suggest that strategies associated with attentional deployment of cognitive resources to other life goals may be effective ways to help participants cope with the stress and emotions associated with concussion. Additionally, these findings support Lazarus and Folkman’s (1984) research that emotional-regulation strategies are commonly utilized when individuals are faced with situations that are threatening and uncontrollable, as the feelings of loss associated with the injury elicits many emotions.

Many of the participants voiced that it was important to be active in some aspects of their lives, even if they could not be physical active in their sport. It has been previously recommended that athletes rest until they are symptom free and abstain from any activity. This has recently been challenged as it is now recommended that during the acute phase of 24-48 hours post-concussion athletes are to rest, and begin a return to activity once they are asymptomatic at rest. They can then begin slowly to slowly return to an active lifestyle while ensuring their activity does not bring on or worsen any symptoms they may have (McCrorry et al., 2017). DiFazio et al. (2015) also did not recommend complete withdraw from sport as it can contribute to deterioration of mood, an increased sense of vulnerability, behaviours of avoidance and anxiety, as well as reinforce feelings of loneliness and isolation, which can consequently cause threats to a sense of self. Participants emphasized the importance of still being active in their lives despite limitations posed by their symptoms. When they were left with nothing to do during recovery except sitting in a dark room, they felt unproductive and often engaged in negative rumination. Rumination often leads to maladaptive outcomes, such as depression (Nolen-Hoeksema, 1991) and participants often cited how they would fall into what one participant called “a cycle of self-depreciation” when they were inactive. It is not a productive
way of assessing and coping with a difficult situation. By focusing on the things they could do during their concussion that did not result in symptoms worsening, participants believe they were better able to overcome their concussion as it served as a distraction from the challenges associated with their injury.

It is possible that the use of emotion-focused coping to manage distress early in the concussion experience enabled participants to improve well-being. Using various emotion-focused strategies such as distraction allowed participants to reappraise their concussion experience positively following recovery. This may suggest that it could have been a positive for them to experience a difficult injury as they now saw problematic experiences in a new way. Several participants voiced that they were able to see beyond their sport and this put things into a bigger perspective for them. This is consistent with current literature which suggests that difficult sport experiences may in be a good learning experience for athletes and that they make meaning of the role sport plays in their lives as new information becomes available (McEwen et al., 2018).

In their reappraisal of their concussion, participants saw it as an opportunity for new things in their lives. They reflected on how it shaped them as a person and allowed them to appreciate sport, life and people around them much more than before. They explained that they no longer took their brain health or sport for granted. This perspective is similar to that of posttraumatic growth, defined by Calhoun & Tedeschi (2004) as “positive psychological change experienced as a result of struggle with highly challenging life circumstances” (p. 1). This suggests that facing adversity and challenges in the form of sport injury can be positive for growth and development personally of athletes.
5.4 Concussion recovery is difficult with limited understanding

The participants’ initial appraisal of concussion was negative, and it was heavily influenced by confusion as a result of limited information about concussion. Participants utilized social support in coping with both their concussion-related emotions and the various stressors associated with concussion. The availability and perceived value of this support, however, was based on their own and others’ understanding of their injury. When participants felt that they understood their concussion, they were then in turn better able to find the support that they desired in their recovery. When others did not understand their injury at all, either due to not having experienced a concussion before or by simply knowing nothing about the injury in general, participants felt less inclined to go to them for support. They believe that since people could not see physical symptoms of their injury it created confusion. Some participants expressed that when people see concussed athletes attempting to engage in physical activity they are unsure if the person is actually injured and often question “can you play or can you not?” There becomes a concern of whether or not the person is actually injured. When participants perceived that others did not understand their injury, they expressed that they no longer were able to confide in them for support. This finding is consistent with the work of Covassin et al. (2014) which suggested that due to the invisibility of the concussion, it is not uncommon for athletes to express dissatisfaction with social support, as they often express belief that they would have had more support if it was an injury that others could physically see. These findings suggest that more information about concussion symptoms and recovery timelines is needed to help athletes navigate their injury.

Participants often expressed that they were not receiving genuine information from medical professionals and others around them at the time of their injury. Participants sought
validation for what they were experiencing in an attempt to understand when they were recovering. For example, one participant described her recovery as “trial and error”, as she would try something and see if symptoms occurred. She recognized that this was not the best way to recover but since she did not know anything about her injury, she believed it was the best option. To cope with these misunderstandings, participants often leaned on the support of those who knew what they were going through by way of experience. Descriptions of the role support played in their concussion recovery is congruent with what Neff (2003) calls common humanity. A facet of self-compassion, common humanity is “seeing one’s experiences as part of the larger human experience rather than seeing them as separating and isolating” (p. 89). This feeling of connectedness to others can help to decrease the negative impact of emotions, which in turn makes it easier to maintain a form of balanced awareness of an individual’s thoughts and emotions towards a stressor (Neff, 2003). Participants stated that they felt when they could talk to someone else who had experienced concussion they were no longer left alone with their thoughts but instead were able to validate them and find ways to work through them. These findings suggest that social support is key in concussion recovery, especially from those who understand the injury by way of experience.

Support from others around athletes when concussed is important in helping to combat feelings of loneliness and isolation. These findings support Mosewich et al.’s (2013) research, which stated that social support was one of the most effective and common ways of coping with injury in sport, as it helped to combat the feelings of isolation experienced when withdrawn from the sport environment. Athletes received both emotional and information support from those in their lives at the time. For example, one athlete expressed how the support helped her to feel less alone, as she described it as empathetic support. Empathy differs greatly from sympathy, as
empathy is supporting another person by taking their perspective on an experience and understanding their thoughts and feelings about it (Birnie, Speca & Carlson, 2010). When she perceived that she was being supported by someone from an empathetic perspective it helped her cope with the emotions she was experiencing, and all of the other associated stressors. Additionally, participants explained that those who had experienced concussion before provided them with information about their experience with concussion which served as a form of informational social support. By seeking the support of someone who had experienced a concussion before, participants were better able to understand their injury as they knew more about it from interacting with these key people. These findings suggest that social support is key to concussion recovery to help athletes cope with feelings of isolation and loneliness, and when support is perceived as coming from a place of understanding, it helps athletes to manage emotions.

5.5 Practical implications

Findings from this study highlight a gap in concussion knowledge and understanding that needs to be addressed. Participants often expressed the difficulty they experienced in having their lives initially halted due to the injury. When they were injured, athletes were often told to rest and avoid any activity, leaving them isolated and without any meaningful activity they could do during recovery. Recent research has found that complete withdrawal from all activity is actually counterproductive to long-term recovery. It is important for individuals with concussion to begin a slow return to regular activity 24-48 hours following injury, as longer periods of rest have been found to contribute to mood deterioration and anxiety among other emotional states (DiFazio et al., 2015; McCrory et al., 2017). Thus coaches and trainers should be aware of this emerging knowledge and begin to transition an injured athlete back to light conditioning within the
suggested time window. During this time, they should be closely monitored for symptoms and mood disturbances.

Knowledge translation has increasingly become recognized as an important part in the education of others about sport-related concussion. With the growth of media coverage of sport-related concussion, it is important that the right information is being reported, including the uncertainties and long-term risks of concussion (McCrory et al., 2017). Evident in the data is the impact of misunderstanding from others throughout their injury experience. This misunderstanding impacted both their perception of concussion and support they received from others in their lives to help them cope. Participants sought out support from people who had experienced concussion as this helped them to bridge their gap in misunderstanding, with these people providing informational support in addition to emotional support. Future studies utilizing methods of knowledge translation are warranted, as they could help to advance knowledge and create connections between actual experience and clinical care.

It is also important to educate individuals who play a key role in athletes’ recovery from concussion, about the emotional and psychological aspects of concussion. This includes healthcare professionals, coaches, trainers, sport psychologists, as well as all varsity athletes. By educating them about these aspects of the injury, it can help them to better understand an athletes’ emotional experience. This education can help practitioners to provide support to athletes to help them navigate the negative emotions associated with the injury and potentially avoid psychological and emotional distress.

Beneficial to helping athletes manage the emotional and psychological aspects of concussion would be coping skills training. Evident in the findings of this research were strategies of emotion-focused coping, such as distraction, which helped athletes to manage the
difficult emotions associated with injury by focusing on other things in their lives. Additionally, emotional regulation in the form of attentional deployment is beneficial for athletes to understand, as this can help them to focus attention to other areas of life to maintain positive emotional states. Finally, by providing information on the benefits of disengagement of unattainable sport goals and reengagement of goals in other things in their lives, athletes can better navigate the challenging process of concussion recovery. By providing information and resources on these specific strategies, it can help athletes to manage their concussion in a way that is both adaptive and positive.

5.6 Strengths and limitations

A major strength of this study is that it explored a understudied area concerning emotional experience of concussion in the context of student-athlete level sport in Canada. It also considered the culture of sport which is closely linked with how athletes perceive and experience their concussions (McCrory et al., 2017). The current research is important to the broader field of concussion research as it provides detailed information on individual athlete experience of concussion-related emotions and stressors. Additionally, the present study also identified the role of emotion-focused strategies (i.e. distraction) played in helping to facilitated a reappraisal of injury which resulted in positive thoughts and emotions. It also exemplified the benefits of using goal adaptation to refocus on goals in other areas of life to help athletes to distance themselves from unattainable goals and focus on attainable ones. Findings provide evidence that these strategies can potentially influence how athletes perceive their concussion. The individual team cultures also influence perception of concussion, as they influence athletes to feel a certain way about the injury which plays a role in their decisions. It suggests that there is a need for more
information about concussion recognition and recovery recommendations, as it can help them to properly identify their injury and make the best decisions to manage it.

The use of qualitative methods enabled me to explore individual athlete experiences and understand their personal perceptions of their experience. Emotions cannot be generalized in concussion experience and it is important to consider each case individually (Hutchison et al., 2009). Interviews with each participant provided me with the opportunity to look beyond the emotional symptoms of concussion and explore athlete’s unique experiences with the injury (Braun & Clarke, 2013). These methods allowed me to provide rich descriptions of athlete experiences with concussion and tell a coherent story of their appraisal of the injury and how they cope with it. These findings are important in helping other athletes and practitioners in the field of sport further understand concussion.

Another strength was the study sample, I recruited 13 individual athletes from diverse sporting backgrounds, both from individual and team sport. They had a range of years of experience in sport at all levels, from 1 to 25 years which allowed me to examine the concussion experience from many different experiential perspectives. Athletes were from various sports, both those where concussion is common (i.e. rugby, American football, soccer, gymnastics, cheerleading and field lacrosse) as well as sports where it is not as commonly acknowledged (i.e. wrestling, swimming, field hockey, basketball and karate). These diverse sport experiences provided data that spoke to the underlying team cultures in each sport. The study also included men and women athletes. Previous research focused primarily on the experiences of men athletes, despite women athletes experiencing more concussions and longer recoveries (Covassin et al., 2013b; King et al., 2014; McCrory et al., 2013). With eight women athletes, I was able to
explore the experiences of women athletes with concussion that previously had not been examined.

There were limitations associated with the study. The sample size of 13 athletes was not large enough to explore some issues in-depth. For example, it was difficult to explore issues around sporting versus team culture in each of the athlete experiences. Another limitation was the number of concussions that each participant had experienced. The number of concussions ranged from one to nine over the course of their careers. The impact of prior concussions and injuries was unknown in this sample of participants. A final limitation was the transferability of the information in this study. With each participant being a Canadian varsity athlete embedded in a particular sport at a particular university, it is difficult to relate their experience to broader samples of athletes.

5.7 Concluding remarks

Concussion is a unique and dynamic injury, exemplifying the importance of considering each experience on a case-by-case basis. The findings of these study help to extend our knowledge about psychological and emotional experience of concussions in varsity sport. They demonstrate the importance of considering the concussion-related emotions and how various factors such as team culture, timing of injury, availability of specific types of social support, and the use of emotion focused coping strategies impacted every athlete experience. By understanding how athletes experience and cope with concussion, it can help practitioners to better understand ways to provide effective support. Additionally, with a need for more information about emotional and psychological correlates of concussion, this research can potentially inform future research, policies, as well as provide more information about aspects of concussion that are not well-known.
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Appendices

Appendix A: Letter of Initial Contact

Emotional Experience of Concussions in Varsity Athletes

Dr. Peter Crocker
School of Kinesiology
University of British Columbia
Contact Number: 

Brittany Epple, BSM
School of Kinesiology
University of British Columbia
Contact Number: 

To whom it may concern,

My name is Brittany Epple and I am a Sport and Exercise Psychology Masters student at the University of British Columbia working under the supervision of Dr. Peter Crocker in the School of Kinesiology. Dr. Crocker and I are studying how varsity athletes at UBC perceive and manage the emotional experience associated with concussions in sport. We are currently looking for men and women athletes, aged 18 and over who are varsity athletes at UBC. The study would involve the athletes participating in a single one-on-one interview with myself that would last approximately 1 hour each. Interview questions would surround their emotional experiences of their concussions in varsity sport and how they perceived and managed this. Athletes will receive a $20 stipend for the interview as compensation for their time and any related travel costs. The findings from our study will further our understanding of emotional experience of concussions in the varsity sport context and how to help athletes manage this.

The reason for my writing of this letter is to ask for your assistance in recruiting varsity athletes. I could personally come to speak with your athletes at a time that is convenient for you and your athletes to explain the study. Alternatively, if this is not possible, I could provide an email message for you to send to your athletes that provides information about the study and my contact information. As you will be sending this to your athletes, I will not have access to any of your athletes’ contact information unless they chose to contact me. You will be able to view the message prior to it being sent to your athletes.

Furthermore, while we appreciate your assistance in recruiting athletes, due to the confidential nature of the study you will not be privy to who chooses to contact the researchers and is
participating in the study. Please note, there is no obligation to agree to the potential recruitment of participants, and any athlete’s involvement will be completely voluntary.

I will contact you in a week’s time to see if you would be willing to assist us in recruiting potential participants (through the methods outlined above). I have also included a letter of introduction to provide you with more information about the study. In the meantime, if you have any questions, comments, or concerns, please feel free to contact myself or Dr. Crocker.

Thank you for your time and consideration.

Sincerely,

Brittany Epple

[redacted]
Appendix B: Recruitment Poster

ARE YOU A VARSITY ATHLETE WHO HAS A HISTORY OF CONCUSSION?

If so, we would love to talk to you!

WHAT IS THE STUDY ABOUT?
The purpose of this research is to explore how varsity athletes perceive and manage the emotional experience associated with concussions in varsity sport.

YOU CAN PARTICIPATE IF:
- You are 18 years of age or older.
- You are a male or female athlete participating in a varsity sport.
- You have experienced a concussion from sport
- You have been medically cleared to participate in sport or fully recovered.

WHAT IS INVOLVED?
If you agree to participate, you will be interviewed on one occasion at a location of your choosing. Each interview will take approximately 1 hour.
You will receive $20 for the interview as compensation for your time and any related travel costs.

WHO IS DOING THE RESEARCH?
Dr. Peter Crocker, Professor in the School of Kinesiology at the University of British Columbia and MA student Brittany Epple.

If you are willing to participate, please call [778] 833-0874 or email brittany.epple@alumni.ubc.ca Thank you!
Appendix C: Letter of Introduction

Coping with the Emotional Experience of Concussions in Varsity Sport

LETTER OF INTRODUCTION

Dr. Peter Crocker  
School of Kinesiology  
The University of British Columbia  
Contact Number: [REDACTED]

Brittany Epple, BSM  
School of Kinesiology  
The University of British Columbia  
Contact Number: [REDACTED]

WHO IS DOING THE RESEARCH?  
The principal investigator for this study is Dr. Peter Crocker, Professor in the School of Kinesiology at the University of British Columbia. Brittany Epple is a second year graduate student working under the supervision of Dr. Crocker.

WHAT IS THE RESEARCH ABOUT?  
We are interested in learning about how varsity athletes perceive and manage the emotional experience associated with concussions in varsity sport.

WHAT WILL PARTICIPATING IN THE STUDY INVOLVE?  
If you agree to participate, you will be invited to take part in one interview (conducted in English) that will be conducted at a place of personal convenience. The interview will be approximately 1 hour in length. The discussions that take place will be audio-recorded and transcribed (written out word for word) for analysis.

You do not need to talk about any issues you do not feel comfortable discussing and if you wish to withdraw from the study you may do so at any time without having to give any reason for doing so. There will be no negative consequences to you or anyone else if you chose to withdraw. This study will not subject you to any physical risk. Although we do not expect any psychological risk, in the event you would like to further discuss your feelings regarding the topics discussed in the interviews, accommodations will be made for you. We will accept participants for the study based on order of initial contact with the researcher.

All participants will receive $20 for completing the interview.
WHAT WILL BE DONE WITH THE INFORMATION I PROVIDE?
Any information you provide within this interview will be made anonymous. You will be identified by a pseudonym (fake name) and identifying information will be removed. All interview transcripts will be kept in a locked cabinet in the office of the principal investigator and no one other than the researchers associated with this study will have access to this information. The information collected will be written up for publication in a scholarly journal and/or presented at an academic conference.

WHAT IF I WISH TO WITHDRAW FROM THE STUDY?
Your participation in the research is entirely voluntary and you may withdraw from the study at any time without having to give any reason for doing so and without experiencing any negative consequences.

HOW WILL THE RESEARCH BE USEFUL?
Findings from this study will allow us to gain insight from varsity athletes about what their emotional experience with concussions was like and how they managed this. Such findings will further our understanding of how athletes experience the emotions associated with concussions and how best to help athletes manage this experience in varsity athletic settings.

If you would like more information about this study or to learn how to become involved, please contact Brittany Epple at (778) 833 0874 or at brittany.epple@alumni.ubc.ca

Thank you!
Appendix D: Consent Form

Coping with the Emotional Experience of Concussions in Varsity Sport

Consent Form

Peter Crocker, PhD (Principal Investigator)  
School of Kinesiology  
The University of British Columbia  
Contact Number: [redacted]

Brittany Epple, BSM  
School of Kinesiology  
The University of British Columbia  
Contact Number: [redacted]

PURPOSE OF THE STUDY:

The purpose of this study is to learn from varsity men and women athletes about how they perceive and manage the emotional experience associated with concussions in sport. Findings from this study will allow us to gain insight from varsity men and women athletes about how they cope with the emotional experience associated with concussions in sport. Such findings will further our understanding of coping with emotional experience of concussions.

STUDY PROCEDURES:

You will be interviewed once at a location of your choosing by graduate student, Brittany Epple. The interview will take approximately 1 hour. With your permission, we will digitally record the interviews so that we can concentrate on what you have to say rather than on taking notes.

CONFIDENTIALITY:

Your identity will be kept strictly private. Only Dr. Crocker and the graduate student involved in the project will have access to the digital recordings and study documents, which will be kept in a locked filing cabinet and on a password protected computer. All data will be encrypted. No names or information that might show who you are will be used when the results of the study are reported. The results of this study will be reported in a graduate thesis and may also be published in journal articles and books.
REMUNERATION:

You will be offered a $20 stipend for the interview as compensation for your time and any related travel costs.

YOUR RIGHTS:

Your participation in the study is entirely voluntary. You may refuse to answer any question or withdraw from the study at any time without giving a reason and without penalty.

POTENTIAL RISKS:

This study will not subject you to any physical risk. You can refuse to answer any questions in the questionnaire package and/or withdraw from the study at any time and doing so will result in no penalty to you or anyone else. Although we do not expect any psychological risk, if we feel participating is placing you under undue stress we will discontinue your involvement in the study and direct you to appropriate resources, again resulting in no penalty. Any data collected prior to this point will be omitted from the study and destroyed. In the event that you would like to further discuss your feelings regarding the topics discussed in the study, your student health/counselling services can be of assistance (UBC Counselling Services: 604-822-3811; UBC Student Health: 604-822-7011).

WHO TO CONTACT IF YOU HAVE COMPLAINTS OR CONCERNS ABOUT THE STUDY?

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or if long distance email RSIL@ors.ubc.ca or call toll free 1-877-822-8595.

QUESTIONS?

If you have any questions or want further information about the study, please contact Brittany Epple by telephone at (778) 833-0874 or by email at brittany.epple@alumni.ubc.ca

CONSENT

☐ I have read the above and I consent to being part of this study of varsity athletes emotional experience with multiple concussions in sport.

☐ I have received a copy of this consent form for my own records.
Signature: ____________________________________________

Printed Name: _________________________________________

Date: ________________________________________________
Appendix E: Demographic Questionnaire

The following questionnaire will ask for some background information and will be used for research purposes only. Accurate information is greatly appreciated; however, questions may be left un-answered if you do not feel comfortable providing certain information. All information recorded here will be kept strictly confidential.

If you would like to create your own pseudonym (fake name for confidentiality purposes), please include it here:
Note that a pseudonym will be created for you if you do not provide one – this will help promote confidentiality.

1. Birthdate (YYYY/MM/DD):
   ________________

2. Gender:
   ________________

3. Current Varsity Sport:
   ________________

4. Number of Years involved in Sport at the Varsity level:
   ________________

5. Number of Years involved in Sport (at all levels):
   ________________

6. How many documented concussions have you experienced?
   ________________

7. How many undocumented concussions have you experienced?
   ________________
The following questions are about the specifics of your concussions. Please complete this information for every concussion (documented or undocumented) that you have had:

8. Date of Concussion:

__________________________________________________

Level of Play:

__________________________________________________

Date of Return to play (if applicable):

__________________________________________________

Days of play missed:

__________________________________________________

☐ Documented ☐ Undocumented

Date of Concussion:

__________________________________________________

Level of Play:

__________________________________________________

Date of Return to play (if applicable):

__________________________________________________

Days of play missed:

__________________________________________________

☐ Documented ☐ Undocumented

Date of Concussion:

__________________________________________________

Level of Play:

__________________________________________________

Date of Return to play (if applicable):

__________________________________________________

Days of play missed:

__________________________________________________

☐ Documented ☐ Undocumented
Appendix F: Interview Schedule

COPING WITH CONCUSSION EMOTIONAL EXPERIENCE
INTERVIEW PROTOCOL

The following questions represent an overarching agenda for the interview with study participants. The questions will be pursued flexibly and may be altered and added to over time as different themes and patterns emerge in the data.

Research Questions:

1. How do Canadian varsity athletes appraise and cope with the emotional experiences associated with multiple concussions?
2. Are there differences in the ways women and men varsity athletes report the emotional experiences (and related appraisals and coping) associated with multiple concussions?

Interview Questions:

1. Is there anything you would like to ask before we begin the interview?

2. Tell me a bit about yourself, and specifically your involvement in sport.
   Probes:
   a) How long have you been participating in your sport?

3. Let’s talk a bit about your concussion experience. How many concussions, that you are aware of, have you experienced while participating in your sport?
   Probes:
   a. Were all of your concussions documented?
      i. By documented, I am referring to team physician evaluating the athlete and properly diagnosing them with concussion. Undocumented is either one that was ignored by the athlete, or not evaluated by a physician, and not diagnosed as a concussion – could be one that was suspected by the athlete.
   b. Did they require you to miss time from your sport?
      i. If so, how much time did you miss?
   c. How much time passed between them?

When asking these questions, I will look to also get an understanding of the timeline in which this occurred (i.e. what year it occurred, age of the athlete)
I want to discuss a bit about the specifics of your concussions. If you do not feel comfortable in answering specific questions about it, feel free to say, “pass”.

4. Tell me about your experience with your concussions.
   Probes:
   a) What symptoms did you initially experience?
   b) How severe were the symptoms you experienced?
   c) Did they last for a long period of time?
   d) Did your concussion impede your ability to complete every day activities outside of sport?
   e) What emotions did you experience during your experience with concussions?

5. When you sustained your concussion(s), how did you view it?
   Probes:
   a) What were your initial reactions emotionally during this time?
   b) Did you view it as a positive experience?
   c) Did you view it as a negative experience?

   *What were the implications for their sport career?*

6. What did you do to manage your concussion(s)?
   Probes:
   a) How well do you feel you coped with the emotional experience with concussion?
   b) Did you feel you were able to manage your experience?

   *Probe for the emotional and psychological experience.*

7. I want to talk a bit about your social support network.
   Probes:
   a) Did you feel support from those in your life during your concussions? (i.e. family, friends, coaches, teammates*, significant others)
   b) Did these relationships change when you sustained your concussions?
   c) How did they support you, or not support you, in your recovery?

   *This is where there is potential for gender differences or similarities. Here, be sure to ask about pressure to return to play, risk taking, etc. – the norms of sport and sport injury. How did this manifest itself for the athletes?*

8. Looking back on your concussion, how do you view the experience?
   Probes:
   a) What would you have done differently?
b) What supports and resources would you have liked to have available to support you?

c) How, if at all, did your concussion impact your return to sport?

d) Do you view it as a predominantly negative experience or positive?

9. What advice would you have for current UBC student-athletes? How would you advise other student-athletes to manage this injury?

10. Is there anything else you want to talk about that I did not ask?

*This is applicable to team sport athletes only*
The **overarching theme** is the umbrella theme that includes various themes below it. Within the present study, the two overarching themes are appraisal of injury followed by coping methods to manage it.

**Themes** are the final themes that were identified.

**Sub-themes** are related to the final themes, helping to tell the coherent story of the theme.

**Candidate themes** were the various themes identified through the early stages of analysis which aided final formation of themes.

Cognitive appraisal of concussion

Unique experiences of concussion
- Limitations due to injury
  - Concussion is a difficult emotional experience
  - Factors that lead to acceptance of the sport culture

The culture of sport influences how athletes view concussion
- Being injured is a sign of weakness
  - Injury is just part of the sport experience

Distractive coping facilitated positive reappraisal
- Reappraising concussion and seeing opportunities
  - "I think doing some things is necessary": Distractions to manage concussion

Coping methods to manage concussion

Concussion recovery is difficult with limited information
- Importance of support from people who have experienced concussion

Stressors associated with concussion
- Emotions as a result of concussion
- Emotions from other stressors
- Pressure from teammates and coaches

Social limitations
- Life changes
- Concussion symptoms
- Impact of other injuries

Limited information
- Downplaying or hiding concussion

Desire to perform
- Avoidance coping
- Focusing on school
- Being active in life
- Goal setting

Acceptance
- A sense of accomplishment

Reframing concussion
- Social withdrawal
- Impact of invisible injury
- Denial of social support
- Personal understanding
- Others' understanding
- Desire for social support
- Common humanity
- Infl. of sport culture