

MENTAL HEALTH OF UNIVERSITY CLUB RUGBY PLAYERS FOLLOWING
INJURY: IDENTIFYING RISK AND PROTECTIVE FACTORS

by

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Submitted in partial fulfilment of the requirements
for the degree of Master of Arts

at

Dalhousie University

Halifax, NS

July 2017

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Abstract

Mental health, rather than mental illness, is an important area of focus within health promotion. Although sport participation has many health benefits, athletes are vulnerable to poor mental health following athletic injuries. By taking advantage of protective factors and limiting risk factors, athletes are able to maintain good mental health despite experiencing injuries. Factors present at each level of an adapted Socio-Ecological Model were explored using qualitative interviews with university club rugby players who have experienced moderate to severe injuries (n=11) and rugby coaches (n=2). A document review was also conducted exploring injury and mental health related information targeted towards student-athletes. Several risk and protective factors were identified and are presented in seven themes: athlete mental health profiles, injury characteristics in a mental health context, other individual level factors, interpersonal relationships, the team environment, the university context, and factors at the societal level.

List of Abbreviations Used

ACHA – American College Health Association

ACL – Anterior Cruciate Ligament

APA – American Psychiatric Association

AUS – Atlantic University Sport

DSM – 5 – Diagnostic and Statistical Manual of Mental Disorders 5th edition

WHO – World Health Organization

Acknowledgements

I am very grateful for the support of my fantastic supervisor, Dr. Susan Hutchinson. I would have been lost on this journey if you hadn't been there to guide me. You've always supported me with kindness and compassion which has made this experience so much easier. You have pushed me to do better and to be better and because of that I have grown not only as a student and as a researcher but also as a person.

I would also like to thank my committee members, Dr. Brad Meisner, Dr. Lori Dithurbide and Dr. Katherine Harman, whose expertise and guidance has been invaluable throughout this process. Each of you are fountains of knowledge and fantastic teachers.

To all the other university staff, faculty members and friends who have offered support and encouragement along the way, it is much appreciated.

A special thank you to my family: Dad, Mom, John and Joe. Your support means so much to me and I definitely would not be here if it wasn't for each of you. Love you all.

Finally, thank you to the participants of this study. Without you this study would literally not have been possible. I am so appreciative that you shared your stories with me. Completing this thesis has allowed me to recognise just how much I have benefitted from playing our amazing sport.

Thank you

Chapter 1: Introduction

Mental Health Promotion

Mental health is a complex component of overall health that is experienced by everyone. Good mental health is representative of good psychological and social functioning, and is not synonymous with the absence of mental illness (Keyes, 2002). Mental illness, however, is comprised of a group of medically diagnosed disorders that result in significant impairment of individuals' cognition, affective abilities and/or behaviour (American Psychiatric Association [APA], 2015). Examples of mental illnesses include: major depressive disorder, schizophrenia and bipolar disorder. Not all those who are experiencing poor mental health also experience mental illness, and vice versa. The focus of this study is on the mental health of injured university club athletes.

To improve or protect the mental health of a population, mental health promotion strategies may be used. Mental health promotion is a process of moderating barriers and enhancing protective factors that contribute to the good mental health of an individual or group (Pollett, 2007). Although mental health promotion can contribute to mental illness prevention, improving mental health is a valuable contribution to individuals and communities itself (Friedli & Parsonage, 2007). Additionally, positive mental health within a population leads to improved economic and social outcomes, such as educational performance and employability (Friedli & Parsonage, 2007). Mental health promotion applies health promotion strategies (World Health Organization [WHO], 1986) to issues related specifically to mental health and illness. By enabling individuals to achieve good mental health and by building supportive environments, mental health promotion aims to achieve well-being for the entire population (Pollett, 2007). A goal of the present study is

to identify important factors that commonly impact injured athlete mental health. This information may then support future mental health promotion strategies.

Student-Athlete Mental Health

University-aged students are found to have an extremely high prevalence of poor mental health (Eisenberg, Gollust, Golberstein, & Hefner, 2007). Specific stressors, including academic stress, financial issues, social isolation and accommodation adjustments result in university students often being considered an at-risk population (Andersson, Johnson, Berglund, & Ojehagen 2009; Eisenburg et al., 2007). Not only are mental health problems common in university students (Blanco et al., 2008), but rates of mental health problems are also growing within this population (Hunt & Eisenberg, 2010; Twenge et al., 2010). In response, many mental health promotion initiatives are implemented for university students (Eysenbach et al., 2014).

A sub-group of university students that is often ignored from a mental health promotion perspective is student-athletes (Cimini et al., 2015). In addition to stressors experienced by the general university student population, student-athletes often face sport-related pressures that can impact mental health (Kroshus, 2014). Included are pressures related to sport performance, difficulties balancing school and sport, coach and teammate relationship challenges, time management requirements and injury-related stress (Beauchemin, 2014; Pinkerton, Hinz, & Barrow, 1989; Rao & Hong, 2016; Watson & Kissinger, 2007). Thus, despite psychological benefits of sport and physical activity (Hawker, 2012), the quality of university student-athlete mental health is likely similar to that of the general student population (Watson & Kissinger, 2007). Furthermore, when mental health problems do arise, student-athletes have greater difficulty accessing

traditional services and supports due to unique barriers they face. These barriers include the practical limitations of sport participation (e.g., time constraints and travelling), a desire to protect one's image within the team, and negative attitudes towards help-seeking (Beauchemin, 2014). Specifically, athletes in contact sports are less likely to seek help than those in non-contact sports (Martin, 2005). In addition, some groups of student-athletes are at an increased risk for mental health problems including female athletes, those in their first year of education, and athletes experiencing pain or injury (Tracey, 2003; Yang et al., 2007). More research is needed on these sub-groups within the student-athlete population in order to adequately address the specific mental health needs of these groups. One such sub-group that warrants specific attention is club sport athletes.

Although athletes who participate on university club teams may have many of the same responsibilities as varsity athletes, they often do not have access to many of the same resources. Research rarely includes university club athletes, and as a response, the present study has focused on athletes belonging to club teams to explore their specific mental health needs.

Injured Student-Athlete Mental Health

Research shows that sport participation can provide physical, social and mental health benefits (Armstrong & Oomen-early, 2009; Babiss & Gangisch, 2009; Bailey, 2006; Hawker, 2012; Penedo & Dahn, 2005). However, sport participation also has the potential to result in athletic injury and, therefore, it is important to study how injuries affect the mental health of athletes. Previous research has focused on the physical nature of injuries and the psychological experiences of injured athletes have frequently been overlooked (Tracey, 2003).

Injured athletes are found to have higher levels of depressive symptoms than non-injured athletes (Appaneal, Levine, Perna, & Roe, 2009), especially immediately following an injury (Quinn & Fallon, 1999; Manuel et al., 2002). Research finds that approximately half of injured athletes experience at least mild levels of depressive symptoms (Leddy, Lambert, & Ogles, 1994). Poor mental health experienced by injured athletes is attributed to a variety of factors including: fear of re-injury, loss of independence, loss of fitness, lack of teammate support, unknown recovery time and loss of position on the team (Chen, Johnston, Petrides & Pfitz, 2008; Tracey, 2003). Appaneal et al. (2009) found that almost 10% of athletes could be classified with major depressive disorder one month following athletic injury. Therefore, injured athletes are a group that may benefit from mental health promotion strategies.

Much of the previous research conducted with student-athletes focuses on the association between injury and mental illness (Reardon & Factor, 2006) such as depression (Appaneal et al., 2009), anxiety (Tomalski, 2013), substance abuse (Green, Uryasz, Todd, & Bray, 2001) and eating disorders (Sundgot-Borgen, 1994). However, there is limited research on the impact of athletic injuries on mental health as opposed to mental illness.

Athletic injuries are common in university sport averaging approximately 13.8 injuries per 1000 athlete games (Hootman, Dick, & Agel, 2007). Of course, differences between sport types have significant effects on injury rate and injury type (Hootman et al., 2007). As a contact sport, rugby has a higher than average injury rate of 22.5-26 injuries per 1000 game exposures (Kerr et al., 2008; Willigenburg et al., 2014). Athletes in sports with higher injury rates, such as rugby, are at a greater risk of injury and the

resulting psychological consequences. Research aimed at improving the mental health of injured athletes is needed within these types of sports, as a response to high injury rates.

Socio-Ecological Model

An ecological perspective recognises mutually-influencing relationships between behaviour and determinants from the individual and their environment (Bronfenbrenner, 1977). This framework has been used to shape models of behaviour in many disciplines including health promotion. The Socio-Ecological Model of Health Promotion (McLeroy, Bibeau, Steckler & Glanz, 1988) is used as an approach to understand or address health issues that require a broad perspective and multi-level analysis (Richard, Potvin, Kishchuk, Pric, & Green, 1996). This model has already guided studies aimed at understanding injuries, specifically from a prevention perspective (Awadzi, Classen, Hall, Duncan, & Garvan, 2008; Baron-Epel & Ivancovsky, 2015). As the current study focuses on the mental health of injured athletes, the Socio-Ecological Model is used to conceptualize various ecological levels which may impact mental health following athletic injury rather than risk factors or prevention strategies for injuries specifically.

A University Sport Socio-Ecological Model has been adapted from McLeroy et al.'s (1988) conceptual framework for the present study. The adapted model (Figure 1) includes the individual level (represented as an injured university athlete), the interpersonal level, the team level, the university level and the societal level. Each level contains risk and/or protective factors that influence the mental health-related experiences of university club rugby players following injury.

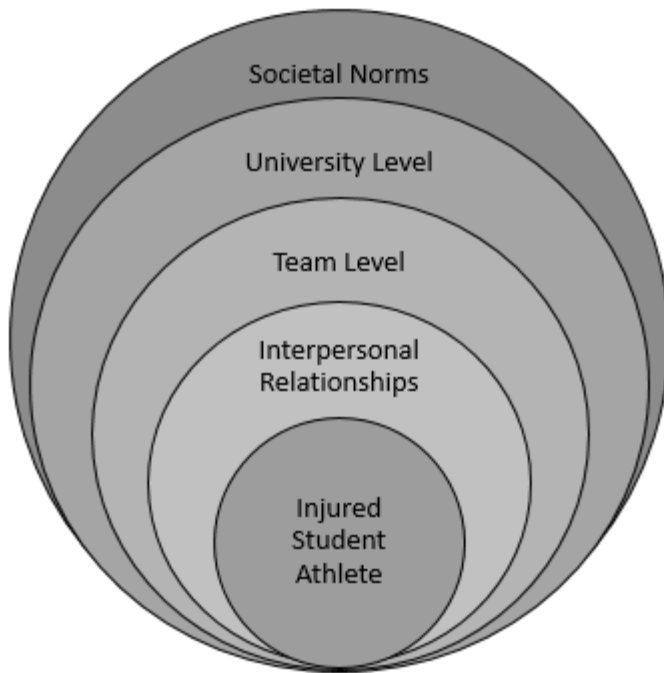


Figure 1: University Sport Socio-Ecological Model

Individual level. The individual level includes many factors that relate to the personal characteristics of the individual and the specific injury sustained. The severity of an injury is considered to have a large impact on the extent to which injury affects mental health (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). Van Mechelen (1997) identifies six factors that are used to identify the severity of athletic injury: nature of the injury, duration and type of treatment, duration of restricted sport participation, working and/or school time lost, permanent physical damage from the injury, and financial costs. The type of injury an athlete obtains (e.g., broken leg, concussion etc.) may impact several of these factors which, in turn, are likely to impact injured athlete mental health.

Athletic identity is an additional individual level factor that may increase risk of poor mental health following injuries (Martin, Adams-Mushett, & Smith, 1995). Athletic identity is defined as the extent to which sport contributes to an individual's self-identity (Brewer, Van Raalte, & Linder, 1993). When an individual strongly self-identifies with

their athletic role, they may experience significant psychological distress when their sport participation is restricted (Martin et al., 1995).

How athletes cope with injuries is another individual-level factor that influences their short and long-term mental health. Coping strategies are defined as “the thoughts and behaviours used to manage the internal and external demands of situations that are appraised as stressful” (Folkman & Moskowitz, 2004, p. 745). The specific thoughts and behaviours with which athletes respond to injuries are important aspects of how the injury is experienced. Other individual level factors include age, playing experience, injury history and previous mental health challenges, and vary significantly between student-athletes. It is important to identify which factors play important roles impacting injured athlete mental health so that athletes who are at high risk of experiencing poor mental health due to injury may be identified.

Interpersonal level. The second level involves interpersonal relationships. These relationships may be sport-related, such as with teammates, coaches and trainers, or they may exist outside of sport, including relationships with family members, classmates and friends. The relationships that an injured student-athlete has can act as key sources of social support or as sources of additional stress. Positive interactions at this level can help protect athletes from psychological distress and improve coping strategies (Green & Weinberg, 2001), whereas negative interactions will put athletes at greater risk of experiencing poor mental health.

Team level. The third level of the model is adapted from McLeroy et al.’s (1988) organizational level, to represent the specific sports team of the injured athlete. The athletic culture and team dynamics may vary between teams as this level is impacted by

both higher levels such as the university to which the team is affiliated, as well as lower levels such as the individual athletes and coaches that make up each team (Tomon & Ting, 2010). The way that injuries are perceived and managed within the team level may also have a large impact on the mental health of injured athletes. The team environment presents many potential risk factors for student-athlete mental health (e.g., peer pressure), however, factors at this level also have the potential to play a protective role for injured student-athletes (e.g., supportive environment).

University level. The university is the fourth level within the adapted Socio-Ecological Model. This is changed from the community level within McLeroy et al.'s framework. Many universities have policies or informal practices related to injury management or mental health care that may impact student-athlete behaviour. This level involves the policies and resources adopted by a university, but also includes impacting factors due to school characteristics. For example, the size and athletic focus of the university may impact how athletes are perceived within the school. At certain universities, athletes may feel more pressure to perform (Duderstadt, 2000) and as a result psychological and behavioural response to injury may be affected (Ardern, Taylor, Feller, & Webster, 2013). In addition, funding differences may affect how injuries are managed by university athletic teams. As club teams often have much less funding than varsity teams, they may have less resources (e.g., trainers, injury management protocols etc.) that impact how injuries are managed. Understanding how risk and protective factors at the university level impact the individual athlete is important for implementing effective mental health promotion initiatives for student-athletes within club teams.

Society level. The outermost level involves larger societal norms. Societal norms are the common attitudes and behaviours within a population or society. These norms vary based on the specific location and environment. Societal norms include gender and cultural norms which can impact individual behaviour and expectations from others (Hardin & Greer, 2009). Men's independence when responding to health issues is an example of a common gender expectation (Smith et al., 2007). Additionally, poor mental health and mental health problems have often been stigmatized (Bauman, 2016). Although stigma occurs at a societal level, it impacts how universities, coaches, teams and individuals recognise and respond to mental health issues (Corrigan, 2000). Stigma may often prevent injured student-athletes from seeking help for mental health problems (Kaier et al., 2015).

Summary. Together, these levels impact the psychological and behavioural responses of athletes to sport injuries. Ultimately, each level affects the mental health of all injured athletes. Additionally, the model provides value by recognising interactions between levels. Factors present at each level of the model may influence, moderate or intensify factors from each of the other levels. There is limited previous research exploring multiple factors that positively and negatively impact injured athletes' mental health, and none that has adopted a social-ecological approach to explore the multiple risk and protective factors that influence student-athlete mental health following athletic injury across individual, interpersonal, team, university and societal levels. By incorporating each of these levels in one study, a more complete collection of potential risk and protective factors impacting injured athlete mental health may be identified.

Summary and Statement of the Problem

Injury rates are extremely high in university rugby players (Peck, Johnston, Owens, & Cameron, 2013). Research finds that injured athletes often experience psychological distress (Appaneal et al., 2009; Fallon & Quinn, 1999; Manuel et al., 2002). As poor mental health is very common in injured university athletes, identifying risk and protective factors for injured student-athlete mental health is critical. Specifically, this knowledge can inform health promotion and harm reduction strategies to mitigate harm caused to athlete mental health due to injury, or ideally prevent injured athletes from experiencing a deterioration of their mental health entirely. This research considers athletic injuries to be inevitable to a certain extent. However, it is thought that every individual has the potential to maintain good mental health despite suffering an athletic injury.

Research Question

The overarching research question for the present study is: What are the risk and protective factors that influence the mental health of university club rugby players following athletic injury? This question is guided by the Socio-Ecological Model which suggests that individual health is influenced by many environmental factors in addition to individual characteristics. To adequately explore risk and protective factors that may influence injured athlete mental health, each of the levels of the Socio-Ecological Model must be included. Additionally, it is important to explore how the interactions between factors and levels of the model influence the mental health of injured student-athletes.

Study Design

To answer the research question, a qualitative approach was deemed most appropriate due to the exploratory nature of the research question. Qualitative data provides a more complete description of the mental health-related injury experience, and allowed the discovery of risk and protective factors which have not previously been identified. Although there is some previous qualitative research on the experiences of injured athletes, much of the research has been quantitative (e.g., Ardern et al., 2013; Peterson, 1996). Qualitative research allows student athletes' perceptions of what factors are the most influential to them to become known.

In order to accurately address each of the levels of the Socio-Ecological Model, different sources were used to gather data. The primary method of data collection was semi-structured interviews with eleven rugby players who have experienced physical injuries. Data from these interviews were supplemented by two interviews with rugby coaches and a document review exploring injury-related resources provided by the university to student-athletes. By exploring the perspectives of both athletes and coaches, a more complete understanding of the injury experience was gained. Data from coach interviews and the document review also provided methodological triangulation, which improved study accuracy and allowed risk and protective factors at each level of the Socio-Ecological Model to be thoroughly explored. In combination, these strategies of data collection provided a more complete understanding of how risk and protective factors impact the mental health of injured student-athletes.

Implications for Health Promotion

By utilizing a Socio-Ecological Model, environmental factors that can be supportive or damaging to injured student-athlete mental health were identified. Improving what is currently known about these environmental influencers can help to create supportive environments. Health promotion builds social environments that are safe and that can contribute to healthy behaviours. The World Health Organization (1986) identifies that individual and environmental factors can be either helpful or harmful to health, and that a basic health promotion strategy is to advocate for these factors to become favourable.

A goal of this study was to identify common risk and protective factors that impact the mental health of university rugby players. Factors that play important roles in determining the quality of injured athlete mental health were identified through this research. By improving understanding of the injury experience, student-athletes may be better able to achieve good mental health. The results of this study may lead to athletes being more aware of risk and protective factors that can influence their mental health following injuries. Additionally, the results of the research will ideally inform injury management policies and/or practices which may then improve the management of athletic injuries so that athlete mental health is improved. Therefore, the dissemination of results to coaches and athletic departments is an important part of this research procedure.

Chapter 2: Literature Review

The majority of mental health issues begin before the age of 24 (Kessler et al., 2005; Reavley & Jorm, 2010). Student-athletes may be additionally vulnerable to poor mental health because they often encounter sport-related risks such as sport performance pressure, time constraints and injuries (Beauchemin, 2014; Pinkerton, Hinz & Barrow, 1989; Rao & Hong, 2016; Watson & Kissinger, 2007). Injuries are common in university sport (Hootman et al., 2007) and often result in mental health problems such as depressive symptoms (Appaneal et al., 2009; Tracey, 2003). Therefore it is important to explore factors that influence the mental health of injured university athletes. This chapter critically reviews past research on mental health, the psychological impacts of athletic injuries, and several risk and protective factors that have previously been identified.

Mental Illness and Mental Health

Mental illness. The term mental illness is often used synonymously with the term psychiatric disorder, referring to medically diagnosed illnesses that impact individuals' behaviour, as well as their cognitive and affective abilities (American Psychiatric Association [APA], 2015). Individual mental illnesses are identified and defined in the American Psychiatric Association's (2013) Diagnostic and Statistical Manual of Mental Disorders (DSM – 5), and include depressive and anxiety disorders, substance abuse and bipolar disorder, as examples. Although those experiencing mental illness may also have poor mental health, these concepts are not mutually exclusive. Mental illnesses are diagnosed based on symptom-prevalence. For example, some symptoms of major depressive disorder include: fatigue, depressed mood, loss of interest or pleasure,

insomnia and feelings of worthlessness (DSM-5). Although these may also be symptoms of poor mental health, poor mental health and mental illnesses are typically differentiated based on the duration of symptoms and level of impairment. The focus of this study was not mental illness or mental illness symptoms, but instead, mental health.

Mental health. Mental health is a core component of overall health. Optimal mental health is not identified as the absence of mental illness but is more appropriately defined as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2014). When an individual is able to achieve this state they may be experiencing optimal mental health. However, when components of optimal mental health are not fully achieved, an individuals’ mental health may also be characterized as good, average or poor. Several important components of this definition are applicable to the mental health of injured athletes. Primarily, optimal mental health is viewed as a state of *well-being*, which is often indicated by positive emotions, such as happiness (Diener, 2000). Additionally, the *ability to cope* with daily stressors is seen as a key component of mental health (WHO, 2014). When athletes are injured it is important that they are able to cope with the accompanying stress. Being able to *work productively and fruitfully* may be difficult for injured athletes (within their sport setting); however if they are able to maintain engagement in other areas of their life, such as their academic program or relationships, they may have improved mental health. Similarly, injuries may be challenging for athletes if they are unable to athletically *contribute* to their team; however, contributing to their team in other ways, or to their community in separate areas of life may be

beneficial to the individual. These components contribute to good mental when present; however, when one or more of these components of mental health are significantly impacted, individuals may experience poor mental health. Poor mental health is operationally defined as significant psychological distress and/or impaired psychosocial functioning, not caused by mental illness. Individuals experiencing poor mental health may experience impaired mood, fatigue or loss of interest or pleasure; however, these symptoms are often short-lived or in response to a specific life stressor compared to those experiencing mental illness. Good and poor mental health are complicated concepts that often present themselves differently between individuals. The present study explores what factors athletes consider protective to their mental health when they are unable to athletically contribute to their team due to injury, as well as factors that may put athletes at a greater risk of experiencing poor mental health.

Dual continuum model. Although mental health and mental illness are often considered opposing states, Keyes (2006) argues that they are instead exclusive but related characteristics. This can be illustrated using a dual continuum model of mental health and mental illness (Figure 2). Both those with mental illness and without mental illness are able to achieve optimal mental health, but both also have the potential to experience poor mental health.

Ideally, high levels of optimal mental health should be achieved within a population, as poor mental health has several societal costs (Dewa, McDaid, & Ettner, 2007). Specifically, poor mental health is associated with many other health and developmental issues such as impaired academic achievement, substance abuse, violence and poor sexual health (Patel, Flisher, Hetrick, & McGorry, 2007). Therefore it is

important to identify and understand the risk and protective factors impacting the mental health of segments of the population that are especially vulnerable to poor mental health, such as injured student-athletes. This model is seen as valuable to the present study as it helps distinguish between mental health and mental illness. Additionally, it recognises that the quality of each individual's mental health may vary from optimal mental health (flourishing) to poor mental health (languishing), regardless of the individual's experience with mental illness. Based on this differentiation, all members of a community may benefit from mental health promotion strategies rather than only those with mental illness.

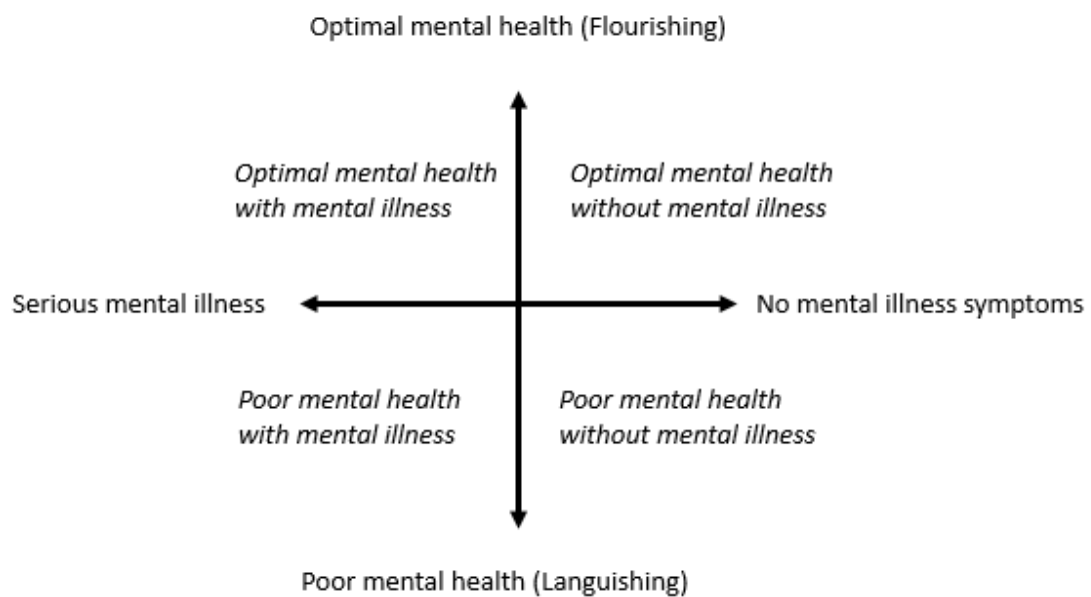


Figure 2: Dual Continuum Model of Mental Health and Mental Illness

University Student Mental Health

University students are often viewed as a population with exceptionally poor mental health (Andersson et al., 2009). Although younger adults have been found to flourish more than older adults (Westerhof & Keyes, 2010), Keyes et al. (2012) found

that only 51.8% of university students have flourishing mental health, whereas the remaining 48.2% have either moderate mental health or are languishing. Although very little research has been done on flourishing and languishing specifically in university students (Renshaw & Cohen, 2014), large amounts of research on mental illness symptoms have indicated that university students have high rates of mental health problems. University students have been found to have a high prevalence of mental illness, similar to that of similarly aged non-students (Hunt & Eisenberg, 2010). Research from Ontario shows that psychological distress is significantly higher in university students than the general adult population (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001).

A large survey completed by 30,000 students from 32 universities across Canada, found a majority of students reported feeling overwhelmed (89.3%), lonely (63.9%), hopeless (53.8%) and exhausted (89.6%) within 12 months of data collection (American College Health Association [ACHA], 2013). These indicators show how common poor mental health is within university students. This study is especially relevant, as poor mental health rather than mental illness is the focus of the current research.

University Student-Athlete Mental Health

University student-athletes have many of the same stressors as other students but additionally face challenges related to sport participation (Beauchemin, 2014). Possibly because of the many proven psychological benefits of sport participation, including improve self-esteem and reduced risk of depression (Hawker, 2012), athletes are often expected to have good mental health. However, research comparing the prevalence of

mental health problems between athletes and non-athletes has produced inconsistent findings (Wolanin, Gross, & Hong, 2015).

Proctor and Boan-Lenzo (2010) found university non-athletes had significantly higher rates of depression than student-athletes. Similarly, Armstrong and Oomen-early (2009) found that athletes had higher levels of self-esteem, social connectedness and lower levels of depression than non-athletes. They contended that increased social support from sport participation protected athletes from developing mental health problems. These findings demonstrate the potential for the sport environment to protect the mental health of athletes.

Conversely, Storch et al. (2005) found that female student-athletes reported higher levels of depressive symptoms than male athletes and male and female non-athletes. In a study of American student-athletes, Cox (2015) found that 33.2% of participants experienced symptoms of depression, higher than previous rates for the general university student population. Additionally, mental health problems may be less reported in student-athletes due to higher levels of personal and perceived stigma towards mental illness compared with non-athlete students (Kaier, Cromer, Johnson, Strunk, & Davis, 2015). As a result it is possible that the prevalence of mental health problems in student-athletes is actually higher than has previously been found.

In a study conducted by Watson and Kissinger (2007) university non-athletes scored better than university athletes on 22 of 23 factors within a wellness scale (although some differences were not statistically significant). The only factor in which athlete scores exceeded those of non-athletes was exercise. It is useful to recognise that this study differs from other studies comparing student-athletes with non-athlete students in

that a measure of mental wellness was utilised rather than measures of mental illnesses. Therefore, the results of Watson and Kissinger's research are more closely aligned with the present study.

Student-athletes may also be less likely to receive help for managing mental health issues when they do arise. University student-athletes are found to utilize counselling services less than non-athlete peers (Watson, 2006). As a result, many student-athletes must overcome mental health issues without any professional support. As student-athletes have unique stressors and vulnerabilities, it is important to research specific situations which cause poor mental health in this population. One stressor that has been found to cause psychological distress is athletic injuries. As student-athletes are likely impacted differently by injuries than the general population, a specific focus on the impact injuries have on the mental health of this population is warranted.

Athletic Injuries and their Psychological Impact

Injury prevalence. Injuries are common in university sport, with higher rates in games than in practices (Hootman et al., 2007). Most injuries in university sport do not result in substantial time lost and as a result are classified as minor or moderately severe (Hootman et al., 2007). Rugby is considered to have one of the highest incidences of injuries of all team sports (Williams, Trewartha, Kemp, & Stokes, 2013), largely due to its high level of physical contact and limited protective equipment.

In a study of American collegiate rugby, Willigenburg et al. (2014) discovered an injury rate of 12.9 injuries per 1000 athlete exposures, with a much higher rate in games (26 injuries per 1000 exposures) than in practices (8.3 injuries per 1000 exposures). Their study found that the majority of injuries were caused by player on player contact (76%).

Sprains were found to be the most common type of injury and the head was the most frequently injured specific body part (Willigenburg et al., 2014).

In a larger study of injury rates within American university rugby teams, Kerr et al. (2008) found the prevalence of injuries to be 22.5 and 22.7 injuries per 1000 player game exposures, for men and women respectively. Injury rate varied by position, with flankers followed by wingers being the most commonly injured positions on men's teams, and centres followed by flankers the most commonly injured on women's teams. Approximately half of reported injuries resulted in the loss of at least seven days of participation in games and practices (Kerr et al., 2008). As injuries are common within the sport of rugby, this group of student-athletes are more commonly exposed to injury as a risk factor for their mental health.

Psychological impact. It is very well established that athletic injuries often result in mental health problems. Several studies have found signs of psychological distress such as depressive symptoms to be common in injured athletes (Appaneal et al., 2009; Brewer & Petrie, 1995; Cox, 2015; Leddy et al., 1994; Manuel et al., 2002). Cox (2015) specifically found that athletes who suffered injuries that caused them to miss games or practices experienced more severe depressive symptoms than those athletes whose participation was unaffected.

Qualitative research by Tracey (2003) examined the psychological effects of student-athletes post-injury and found that injured athletes often reported symptoms of depression at onset. One reason athletes gave for their psychological distress included the fear of loss of position within the team, which seemed to be more prevalent than the fear of re-injury. In addition, some athletes identified loss or damage to athletic identity (the

degree to which an athlete self-identifies with an athlete role) as a challenge of their injury experience (Tracey, 2003). An interesting finding of Tracey's study was that athletes identified attending practice but being unable to participate due to injury as an especially challenging experience. Athletes felt left out and that they were letting down their team by not practicing (Tracey, 2003).

Risk and Protective Factors

Risk and protective factors include any individual, social or environmental characteristic that can either positively or negatively cause, affect, impact or prevent mental health change (Fazel, Reed, Panter-Brick, & Stein, 2012). These factors fall under one of the five levels of the adapted Socio-Ecological Model introduced in Chapter One. These five levels include: the individual, interpersonal relationships, the team, the university and societal norms. Past research relating to several risk and protective factors is presented here, classified under each level of the Socio-Ecological Model.

Individual Level

Injury severity and type. The severity of an injury is considered to be a risk factor that has a large impact on the extent to which the injury affects mental health (Wiese-Bjornstal, et al., 1998). Van Mechelen (1997) identified six factors that are used to identify the severity of athletic injury: nature of the injury, duration and type of treatment, duration of restricted sport participation, working (school) time lost, permanent physical damage from the injury, and financial costs. Injuries that result in greater restriction of sport and everyday life are expected to have a greater impact on mental health, whereas injuries that have minimal activity restriction are expected to cause less psychological distress (Appaneal et al., 2009).

The type of injury an athlete obtains may impact several factors involved in determining injury severity, and is likely to impact the psychological effect of the injury. As concussions often impact academic participation in addition to athletic participation (Halstead et al., 2013), cause memory loss and confusion (McCrory et al., 2013) and impact several areas of normal everyday life (Robertson, Manly, Andrade, Baddeley & Yiend, 1997), they are often thought to be especially damaging to mental health (Omalu et al., 2005). However, Mainwaring, Hutchison, Bisschop, Comper and Richards (2010) found that athletes with anterior cruciate ligament (ACL) injuries report more emotional disturbance than athletes with concussions, likely due to significant physical pain, lengthy recovery time and limited mobility.

Athletic identity. “The degree to which an individual identifies with the athlete role” is defined as athletic identity (Brewer, Van Raalte, & Linder, 1993, p 273). Individuals’ identities are often based on their social affiliations. This allows individuals to define themselves based on key social groups to which they are members (Ashforth & Mael, 1989). University student-athletes may be members of many social groups simultaneously based on their age, gender and religious affiliations (Ashforth & Mael, 1989), however, as athletes at the university level often commit high levels of time and effort to sport, it can easily become a key part of an athlete’s self-concept.

A high degree of identification with the athletic role can lead to both positive and negative effects. Positive elements of a highly developed athletic identity may include increased long-term physical activity and athletic performance (Horton & Mack, 2000; Strachan, Woodgate, Brawdley & Tse, 2005). In contrast, high athletic identity is associated with negative consequences when there is a cessation of athletic participation

due to injuries, deselection or retirement (Brewer et al., 2013). Wolanin et al. (2005) found that athletes with high levels of athletic identity are prone to difficult emotional adjustments after retirement. Sparkes (1998) noted the vulnerability of athletes with high athletic identity and recommended that health professionals recognise the impact of critical life events such as injuries on self-concept. Multiple studies show that athletic identity is associated with depression in injured athletes but not healthy athletes (Brewer et al., 1993; Green & Weinburg, 2001). Athletic identity is perceived to be one of the key risk factors impacting injured athletes' mental health present at the individual level of the Socio-Ecological Model.

Coping strategies. As mentioned in the previous chapter, coping strategies are the specific “thoughts and behaviours used to manage the internal and external demands of situations that are appraised as stressful” (Folkman & Moskowitz, 2004, p. 745). Coping strategies can be either helpful or harmful to the individual. Certain coping strategies, such as the recruitment of social support, use of humour, venting of emotions, planning and suppression of competing activities, have been found to improve affect and are seen as productive (Carver, Scheier, & Weintraub, 1989; Gaudreau, Blondin, & Lapierre, 2002; Ntoumanis & Biddle, 1998), whereas the use of other coping strategies such as denial, avoidance, mental disengagement, aggression and the use of alcohol or drugs are seen as maladaptive and potentially harmful (Carver et al., 1989; Galovski & Blanchard, 2004; Hasking, Lyvers, & Carlopio, 2011; Sasse et al., 2014).

In a quantitative study of Swedish athletes, Johnson (1997) found that injured female athletes utilised more emotion-focused coping strategies (e.g., venting) than injured male athletes and that team sport athletes used a passive approach, waiting for

social support to come to them, whereas individual sport athletes were more likely to actively problem-solve. Johnson (1997) also suggested that social support is an important aspect of managing sport injuries and should be included in the injury rehabilitation process.

Green and Weinburg (2001) utilized an athletic coping skills inventory to measure coping skills in injured recreational participants and found that higher levels of perceived positive coping skills, such as the abilities to think clearly under stress and set goals, were related to lower levels of mood disturbances. Although the use of positive coping strategies can help injured athletes manage psychological distress, harmful coping approaches are often used. One maladaptive coping strategy that is often found in injured athletes is substance abuse (Cox, 2015). This is not surprising given that alcohol use and problem drinking are more common in student-athletes than the general student population (Brenner & Swanik, 2007; Yusko, Buckman, White & Pandina, 2008).

Papinikolaou et al. (2003) suggested that freshman student-athletes may be especially likely to use poor coping strategies such as skipping classes, the excessive use of alcohol and withdrawing from the team or sport. This is likely due to significant lifestyle changes and stress associated with beginning university as a student-athlete as well as perceptions of how older peers behave as a response to stress.

Mental toughness and resiliency. Mental toughness is an often vaguely defined term broadly categorized as a group of psychological features that improve sport performance (Mahoney, Gucciardi, Ntoumanis & Mallet, 2014). These characteristics include self-confidence, optimism, and resiliency (Butt, Weinburg, & Culp, 2010; Jones, Hanton, & Connaughton, 2002). Mental toughness has been found to be a strong

predictor of psychological well-being in undergraduate university students (Stamp et al., 2015). The concept of mental toughness also relates to academic performance (Crust et al., 2014). However, athletes' perceptions of mental toughness often involve expressions of physical toughness such as playing through pain and injuries (Coulter, Mallett, & Gucciardi, 2010). Toughness has also been identified as a negative influence on help-seeking, especially in relation to masculinity (Addis & Mahalik, 2003; Steinfeldt & Steinfeldt, 2012). Although these characteristics may put athletes at a greater risk for injury and poor mental health, mental toughness is consistently seen as a desirable characteristic in sport (Coulter et al., 2010).

Resiliency is a personal characteristic associated with positive response to experiences of adversity (Luthar, Cicchetti & Becker, 2000). As athletic experiences are unpredictable, the development of appropriate coping behaviours is extremely valuable (Brown, Lafferty, & Triggs, 2015). Resiliency has been recognised as an athlete's ability to 'bounce back' (Galli & Vealey, 2008) from poor performance, injuries or other psychological stressors. Injuries are a common source of adversity in sport which require athletes to exhibit resilience in order to function normally. However, responding to injuries positively can be challenging, even when injuries are not overly severe. When an athlete is unable to be resilient following injury, their mental health will likely suffer more as a result. As such, resiliency is considered to be a protective mechanism and a cognitive coping strategy (Brown et al., 2015).

Interpersonal Level

Social support. The interpersonal level of the Socio-Ecological Model involves the social interactions an injured athlete has. This includes relationships within sport such

as those with teammates, coaches and trainers, but also includes relationships outside of sport such as those with family members or friends. Relationships that benefit or protect mental health are regularly regarded as sources of social support. Social support is defined as “an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient” (Shumaker & Brownell, 1984, p 11). Injured athletes have been found to have reduced stress, improved emotional response to injury and greater life satisfaction when they perceive adequate social support (Shuer & Dietrich, 1997). Similarly, Green and Weinburg (2001) found that injured athletes’ satisfaction with social support was significantly related to mood disturbance, with higher levels of social support satisfaction serving a protective purpose.

Yang et al. (2010) studied student-athlete social support patterns before and after injuries. In general male athletes reported more sources of social support whereas female athletes reported greater satisfaction with the social support they did receive. Injured athletes reported relying more heavily on their social support than uninjured athletes and were also more satisfied with the support they received. Injured male student-athletes were significantly less satisfied with the social support they received from family members than when they were uninjured. Social support is thought to be a key mechanism by which interpersonal relationships are able to influence mental health (Shumaker & Brownell, 1984). The current study qualitatively explores the attitudes of injured athletes towards the social support they receive.

Team Level

Team dynamics. The team level involves broader team dynamics and the shared attitudes and values of members of each team. These communal thoughts and behaviours

contribute to a 'team culture'. In relation to elite sport performance, Cruickshank and Collins (2012) define "culture as a dynamic process characterized by the shared values, beliefs, expectations and practices across the members and generations of a defined group" (p. 338). This culture has the potential to benefit team performance through shared competitiveness, for example (Cruickshank & Collins, 2012), but may also cause team members to engage in potentially harmful behaviours such as alcohol abuse (Fuchs & Le Henaff, 2012).

Nixon (1992) described a culture of risk in sport, which includes pressures to play with injuries, character assessment through pain tolerance and toughness, and a general acceptance that the team is more important than the individual. Nixon II (1996) found that almost half of athletes who had experienced a significant injury felt pressure from coaches to play when hurt. Nixon II (1996) suggests that although injuries are inevitable in high level sports, team environments should not cause athletes to be at an unreasonably high risk of injury or pain.

Rugby culture. Rugby is a highly physical sport that regularly adopts characteristics of aggression, violence and toughness (Light, 2007; Williamson, 1995). Despite a potential trend towards more social inclusion and support in rugby (Anderson & McGuire, 2010), the physical nature of the sport continues to grow (Bathgate et al., 2002) and players still strive to be physically intimidating and tough (Light, 2007). However, it is unclear how the culture of rugby impacts the perception of injuries and mental health within the sport. Although it is likely that the sub-culture within a sport team will impact an athlete's psychological response to injury, this relationship has very minimally been researched (Bunce, 2013). No research was found on how the perception

of injuries within a team may impact the mental health of athletes who are unable to participate in sport due to injury. Additionally, the sport of rugby itself may be seen as a risk factor for mental health, due to the high risk of injury.

University Level

Injury management. Little research has been done on the psychological impact of injury management policies within university sport. However, these policies are quite common. Baugh et al. (2015) found that a majority (92%) of NCAA coaches were aware of concussion management policies at their school. Furthermore, most coaches believed health professionals such as sport physicians, rather than players or coaches, have the responsibility to indicate when return-to-play is acceptable. Injury management policies are expected to help protect the health of university athletes when complied with (Baugh et al., 2015). Therefore, research is needed to inform policy makers of the best way to protect the mental health of injured athletes.

On-campus mental health resources. Although mental health services are common on university campuses, limited awareness and perceived lack of need are found to impact accessibility (Eisenburg, Golberstein, & Gollust, 2007). Additionally, student-athletes are found to be less likely to seek help for mental health problems than non-athletes (Gulliver, Griffiths, & Christensen, 2012; Watson, 2006). As a result, the mental health needs of student-athletes are rarely professionally treated. Putukian (2016) suggests that athletic trainers and coaches can be key players in encouraging student-athletes to seek help when needed. However, further research is needed to identify what mental health supports would be useful for injured student-athletes, and what supports they would be willing to utilize.

Societal Level

Stigma. Mental health issues are often described as stigmatized (Corrigan, 2000). Goffman (1963) defined stigma as an attribute associated with an individual or condition that is deeply discrediting. Phelan and Link (2001) describe stigma based on five core features: labelling, stereotyping, separation, status loss and discrimination which collectively occur. In a qualitative study of Canadian university football players, DeLenardo and Lennox Terrion (2014) found mental illness to be frequently associated with weakness. It was also found that stigmatizing attitudes served a social function within the team and were associated with toughness and masculinity. Similarly, Bauman (2016) noted that mental toughness and mental health are regularly seen as contradictory in sport settings. He suggested that the culture of sport has to change in order for athlete mental health issues to be less stigmatized.

Kaier et al. (2015) compared perceptions of stigma towards mental illness between student-athletes and non-athlete students and found that athletes had higher levels of personal stigma (personal negative attitudes towards mental illness) and perceived public stigma (perceived negative attitudes of others). It was suggested that this may be a reason for underrepresentation of student-athletes at campus counselling services (Watson, 2006). Perceived stigma may also impact injured athletes' willingness to recruit social support (Kaier et al., 2015). Although stigma is presented as a risk factor at the societal level, it also exists at each lower level due to the interactions between levels of the Socio-Ecological Model. The current study explores athlete and coach perceptions of how stigma impacts injured athlete mental health.

Masculinity. It is well-established that male health promotion and prevention behaviours are poorer than those of women (Evans et al., 2011). Socially-constructed masculine norms have resulted in men having more unhealthy behaviours and ineffective coping strategies (Evans et al., 2011). Men who more highly endorse masculine norms have been shown to have higher rates of depression, anxiety and substance abuse (Blazina & Watkins, 1996; Cournoyer & Mahalik, 1995) as well as worse psychological well-being (O'Neil, 2008).

As a heavy contact sport, rugby has traditionally been seen as a sport that embodies hegemonic masculinity (Light, 2007). Hegemonic masculinity can be defined as a conceptualization of masculinity involving the male dominance over other genders and non-heterosexuality (Connell, 2005). In practice, this involves men exhibiting characteristics of aggression, dominance, physical toughness and authority. When injuries occur, masculine norms may cause male rugby players to underplay or ignore any mental health issues they perceive. In a study of college football players, Steinfeldt and Steinfeldt (2012) found that athletes who conformed more closely to traditional masculine norms were more likely to have negative attitudes towards seeking help for psychological issues. As a result of negative attitudes towards help-seeking in this population, individuals may have been separated from positive coping supports that could otherwise have been beneficial. The present research explores how masculinity is perceived by male athletes and coaches to impact mental health of injured athletes.

Femininity. Unlike male rugby players who try to live up to gender expectations, female rugby players attempt to challenge traditional passive feminine norms (Ezzell, 2009). Female rugby players use violence and physicality to promote an alternative

version of femininity (Gill, 2007). Rugby may be seen as a gender-equalising mechanism which allows female rugby players to define their identity in a way that is simultaneously tough, athletic and feminine (Ezzell, 2009). As a result, female rugby players may feel pressure to respond to injuries in a ‘tough’ manner just like their male counterparts. No past research was found regarding how this re-creation of femininity impacts female athletes’ psychological response to injury.

Summary

This chapter reviewed current literature on mental health, and specifically outlined differences between mental health and mental illness. Mental health issues relating to university students and student-athletes were described and potential risk and protective factors for the mental health of injured athletes were presented at each of the levels of the Socio-Ecological Model.

As few studies focus on mental health rather than mental illness, it is important to further explore mental health specifically within the student-athlete population. Although past research on the mental health of student-athletes is inconsistent, it is likely that the quality of mental health in university student-athletes and non-athlete students is similar. However, student-athlete mental health is impacted both positively and negatively by many factors that do not also impact non-athlete students. As a result, it is important to explore risk and protective factors within this unique population.

Overall, past research related to factors impacting injured student-athletes’ mental health has been quite fragmented, often only studying one potential factor that may protect or harm the mental health of injured athletes. However, due to the complexity of the topic, it is important to study many influential factors and their interaction, both

within and outside the realm of sport (Green & Weinburg, 2001). The individual level is probably the most well researched level in relation to the mental health of injured athletes. Factors present at this level have often been researched in isolation but are rarely studied together. Additionally, factors from certain levels of the Socio-Ecological Model have been relatively unexplored in the context of athlete mental health. Specifically, factors presented at the team and university levels have been very rarely associated with the mental health of injured athletes. The present study takes a more inclusive approach intended to provide a more complete description of how athletes experience injuries. Rugby provides a unique opportunity for research of athletic injuries because of the high prevalence of injuries within the sport. Additionally, the physical nature of the sport allows research to explore how valued characteristics in sport such as toughness impact how injuries are experienced and perceived within sport.

Chapter 3: Methods

Epistemology

Social constructivism is based on the assumption that reality is subjective and is derived from the experiences of the individual and opposes perspectives that suggest knowledge is based on objective observation (Burr, 2015). This approach fits well with the current research as the subjective experiences of injured athletes were key part of what the study explored. As social constructivism recognises the influence of historical and cultural contexts, a qualitative approach is supported (Burr, 2015). This philosophy recognises the value in each individual and accepts that differing perspectives may be equally valid. This philosophy was believed to be appropriate for the current research because it aligns well with the Socio-Ecological Model. Social constructivism identifies the impact that societal norms and organizational levels (teams and universities) have on individuals. Additionally, social constructivism places value on individual perspectives and experiences (Burr, 2015), including those of both athletes and coaches. Social constructivism suggests that reality is derived from shared meanings.

Research Approach

Qualitative description, a traditional qualitative research approach (Neegaard, Olesen, Andersen, & Sondergaard, 2009), is selected for the present study. “Qualitative descriptive studies have as their goal a comprehensive summary of events in the everyday terms of those events” (Sandelowski, 2000, p. 334). Descriptive qualitative research requires the collection of sufficient amounts of data to provide a detailed description of a phenomena (Lambert & Lambert, 2012) and is beneficial for answering research questions that may be especially relevant for practitioners and policy makers

(Sandelowski, 2000). Sandelowski outlined three features of qualitative description. First, qualitative description is perceived as categorical, meaning that it is intended to assist in grouping or categorizing data, rather than other forms of data analysis (e.g., narrative analysis). Second, qualitative description is seen as less interpretative than ‘interpretive description’ with a focus on describing an event rather than focusing on interpreting or explaining the findings. Finally, the approach does not require a highly theoretical representation of data, but rather focuses on detailed description. To this end, Sandelowski emphasized that qualitative descriptive research focuses on *accurately* conveying events. Based on these three tenets, qualitative description typically draws on beliefs from naturalistic inquiry, committing to studying a topic in its natural state (Sandelowski, 2000).

Since the present study aimed to understand the multiple and intersecting factors that impact the mental health of injured university athletes it was important to obtain a detailed description of factors that may help or harm mental health in this circumstance. Typically, qualitative description involves purposeful sampling and minimally to moderately-structured interviews (Sandelowski, 2000). A qualitative description research approach allowed for the exploration of the experiences of injured university rugby players from a mental health perspective with appropriate depth to thoroughly understand the issue.

Research Design

A qualitative research design was selected to answer the research question: *What are the risk and protective factors that influence the mental health of university rugby players following athletic injury?* Interviews and a document review were used to answer

this research question. Interviews with injured athletes were used as a primary data source. It would have been difficult to thoroughly explore risk and protective factors across all levels of the Socio-Ecological Model by collecting data only from individual athletes. Although the lived experiences of injured athletes are central to the study, individuals are only able to discuss factors at outer levels (e.g., team level, university level) based on their subjective experiences. As a result, factors at outer levels of the Socio-Ecological Model were more effectively explored by including data from other methods in addition to individual subjective experiences. This is the rationale for utilizing coach interviews and a document review as supplementary data collection methods. By integrating these data collection strategies, risk and protective factors across each level of the Socio-Ecological Model were addressed.

Target Population and Participant Selection

The primary population that this study focused on was injured university rugby players. However, interviews were also conducted with coaches in order to explore factors impacting their experiences of injury from multiple perspectives.

Originally athletes and coaches were to be recruited from four teams (two men's and two women's) associated with two universities in Atlantic Canada. The plan was to include five players from men's teams and five players from women's teams. Although ethical approval was obtained to include participants from each of the four teams, only teams from one of the two universities were ultimately included. This change was made to improve ease of recruitment.

The two teams included in the study were associated with the same large university in Atlantic Canada. Coaches were recruited from the same two teams as the

players. Interviews were conducted with players who had experienced injuries in the last two years and a coach from each of the men's and women's teams. The university rugby season usually begins in early September and continues until November. This study utilized purposeful sampling strategies to identify and select participants who could provide useful and evidence-rich information related to a specific case (Palinkas et al., 2015). Although purposeful sampling may increase bias, it was used to actively recruit participants who have a great amount of knowledge (Marshall, 1996).

Inclusion Criteria

Originally, to be considered eligible for participation in the current study, athlete participants were required to have experienced injuries while playing rugby for one of the teams targeted for the study. This inclusion criterion was revised during the recruitment process. After presenting to each team, few eligible female participants expressed interest in participating in the study. Two players expressed interest; however, the original inclusion criteria did not qualify them for participation because their injuries had occurred outside of participation for their university team (e.g., weightlifting, playing rugby for another team). As five female participants were desired for the study, an amendment was made to the study's ethics application (allowing participation of players whose injury did not occur while playing for their university team) and these players were subsequently included.

Additionally, participants had to meet several other criteria. All participants: had to be at least eighteen years of age; had to have played for either of the specific men's or women's teams involved in the study; and had to have experienced an injury within the past two years. Two years was seen as an appropriate outer limit for participation as it

allowed participants to have time to reflect on their injuries while limiting the possibility of participants forgetting experiences due to the passage of time. Although injuries may have occurred while the individual was not playing rugby, injuries must have prevented participation in rugby games and practices for at least one week. This timeframe allowed the participation of rugby players who experienced moderate and severe injuries, defined by match participation lost (Tracey, 2003). As more than ten male players were eligible and willing to participate in the study, priority was given to participants who maximized variation (Sandelowski, 1995). Sandelowski (1995) states that researchers must decide what types of variation will be most valuable to their research. For the present study, variation was desired for injury type (to compare concussions with other injuries), year on current team and length of playing time lost.

Head and assistant coaches of both teams were considered eligible for participation. One coach was interviewed from each team. Coaches were able to address specific factors, such as team dynamics and the team relationship with the university more thoroughly than athletes, and the combination improved the depth of the data related to team and institutional level factors impacting injured athletes' mental health.

Recruitment Strategies

The researcher first met with coaches to discuss the research and obtain support for the data collection process. Following this ethical approval was obtained and the lead researcher briefly presented himself and the study (Appendix A) to both teams after a team practice at the team's convenience. At that time, athletes who were injured within the past two years (ie. since fall 2014) were asked for contact information if they were willing to participate in the study. Coaches were also asked if they would participate in

the study themselves. Two participants were directly contacted by the lead researcher to ask if they were interested in participating. Although it was known that these participants had experienced injuries and were eligible for the study, they were not present at the time of presentation to the teams and would not otherwise have been informed of the study. All potential participants were emailed (Appendix B) to inform them of the study and ask for their participation. Participants were additionally asked to complete a screening tool (Appendix C) which allowed for participants to be selected in order to maximize variation (Sandelowski, 1995) in terms of injury characteristics, year on team and length of playing time lost. If athletes and coaches agreed to participate, a meeting was scheduled to review informed consent information (Appendix D) and to conduct the interview.

Study Context

All participants within the study were members of either the men's or women's club rugby teams at a large university in Atlantic Canada. As university clubs, both teams are ratified student societies. Societies are normally organized by a group of executive members. Within club sports this executive is responsible for selecting coaches, as well as administrative tasks including game and practice scheduling. The men's rugby team competes against other university teams within the region, while the women's team competes against university teams, as well as non-university affiliated club teams. The competitive season for both clubs is in the fall, with games typically being played between September and November. The men's team was comprised of slightly more players than the women's team.

As both teams are open to all students, skill level and playing experience between players often varies substantially. There are no varsity or higher level rugby teams within the University, and as club teams, neither were recognised with varsity status. There are several important differences between club and varsity teams that may impact the attitudes of players, demands of participation and how injuries and mental health issues are managed. For example, varsity athletes generally commit more time to practices and competition and may feel more stress associated with time commitments and performance expectations. Although student trainers were provided to varsity teams as well as both club rugby teams included in the present study, varsity athletes generally have increased access to university resources including training and physiotherapy facilities. Coaches of club teams are selected by the player executive and are normally volunteers, whereas varsity coaches are hired by the University and are often full-time employees. Additionally, varsity athletes and coaches typically attend orientation events organized by the University, whereas only members of the executive on club teams receive orientation. Although previous research has often focused on varsity athletics, club level athletes may experience many of the same pressures and responsibilities as varsity athletes, while having access to fewer resources. As a result, it is important to explore the attitudes of club athletes, who may experience different mental health risk and protective factors than varsity athletes.

Data Collection

Two methods were used to collect descriptive data: interviews and document review. Each is described below.

Interviews. Interviews are a qualitative research method used to collect detailed descriptions of peoples' experiences, opinions, behaviours, actions and feelings (Patton, 1990). Semi-structured interviews consist of several open-ended questions organised in a loosely structured fashion that guide discussion towards the areas being explored (Britten, 1995). Once informed consent was obtained, in-person semi-structured interviews were conducted with both injured athletes and coaches. These interviews were conducted in a quiet, secure location (university study rooms) and lasted between 30 and 80 minutes. Separate interview guides were created and used for the student-athlete interviews (Appendix E) and coach interviews (Appendix F). Athletes were asked questions about their overall injury experience, as well as specific questions about potential risk and protective factors identified in previous research. Coaches were asked for their perspectives on many of the same risk and protective factors, however, these interviews focused more on the team environment and the relationship between the team and the University.

The interview guides included both open-ended questions as well as follow-up questions and probing questions. Open-ended questions allow the researcher to explore specific topics in a large amount of depth, whereas probes are used to help interviews maintain their focus and clarify unclear exchanges (Rubin & Rubin, 2012). Interviews were audio recorded so that accurate transcription was able to be done. Rubin and Rubin (2012) argue that even when interviews are recorded, note-taking is useful to improve accuracy. Limited note-taking was done during interviews to help the researcher remember key pieces of information and to identify important non-verbal communication cues that could not be audio recorded.

Document review. Document review is a form of qualitative inquiry that collects data from official publications and reports, organizational and program records and open-ended responses to questionnaires or surveys, yielding excerpts, quotations or entire passages (Patton, 1990). A review of documents can be used to support data obtained through interviews by providing context and background on a specific setting (Marshall & Rossman, 1999). Document review is considered an ‘unobtrusive method’ meaning that it can be conducted without disturbing the natural environment in any way (Marshall & Rossman, 1999). This is aligned with the values of qualitative description and other methods used. This additional method of data collection also provided methodological triangulation which is conceptually supported by the Socio-Ecological Model.

The present study involved a document review of select written documents provided by the university to student-athletes. Documents were included if student-athletes were the intended target of the information and if the documents were produced by or used practically by the university. Documents were excluded if their focus did not relate to injury management or mental health. This included travel and hazing forms, as well as documents that were solely administrative (Waivers, society ratification form, sport club renewal form, etc.). Documents that were not currently used (e.g., older versions) were also not included in the study. Information that was targeted towards the general student population rather than specifically student-athletes was also not included. As this included most information on campus mental health resources, some of these resources were briefly described following the document review.

Documents were searched for on university athletic department and campus recreation webpages. Additionally, coaches, the athletic director, and recreation

coordinator were asked of any relevant documents. Through these discussions and webpage searches, five documents were identified.

Data Management and Analysis

Interviews. During the present study, data collected during interviews was audio recorded and transcribed. Transcription from the audio recording was performed by the interviewer shortly after the interviews had taken place so that context and non-verbal communication could be remembered (Rubin & Rubin, 2012). Transcriptions were done verbatim on Microsoft Word and stored on a password protected computer. Names were removed from transcripts and replaced with participant numbers for participants, and relationship descriptions for non-participant names used (e.g., teammates). Gender, personal characteristics and injury characteristics were kept and used in data analysis.

After interviews were transcribed and reviewed, thematic analysis was used as a method of data analysis. Thematic analysis is used to identify, examine and produce patterns in qualitative data (Braun & Clarke, 2006). Braun and Clarke identify six steps of thematic analysis: familiarizing yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. These six phases were used as guidelines in the current research. Miles and Huberman (1994) identify codes as “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study... attached to ‘chunks’ of varying size – words, phrases, sentences, or whole paragraphs” (p. 56). Coding is done to group important concepts, special events and themes. Miles and Huberman (1994) further explain that codes are not necessarily the words themselves but are associated with what was meant in the context of the data. Thus, it is important for the coding to be done by

researchers who are aware of the topic and familiar with the interviews. Codes that were initially generated included 'boredom' and 'visibility of the injury'.

After completing transcription, the researcher read the interview scripts to become familiar with the content. A journal was kept during this initial familiarization to keep track of important pieces of information: within this potential codes were identified. Next, a draft coding framework was created and a single transcript was coded and discussed by the researcher and supervisor. Through discussion, codes were agreed upon and the coding framework was revised. This step was then repeated using an additional transcript. Each of the transcripts was then coded using the revised coding framework. Only small changes were made to the coding framework before coding the transcripts from the coach interviews. Some of the previous codes were not relevant to the coach interviews and some codes were unique to these transcripts (e.g., perceived relationship with university).

After all transcripts were coded, potential themes were agreed upon by the researcher and supervisor. Potential themes are broad categories within which many codes are classified (Braun & Clarke, 2006). These themes and the relations between them were discussed multiple times and were revised before the final themes and sub-categories were agreed upon. Visual representations such as thematic maps were used to help the researchers identify the relationships within and between codes and themes (Braun & Clarke, 2006).

Document review. Document reviews are often analysed through a specific approach called content analysis which is historically seen as an objective and unbiased way to describe artifacts of a society or group (Marshall & Rossman, 1999). Although

content analysis is often performed in a way that allows researchers to quantitatively answer questions (such as through the use of frequencies), searching for patterns and themes is also commonly used within content analysis as a qualitative approach (Carney, 1972). Parts of documents that pertain to specific topics are called content areas, which may be grouped into categories in a similar fashion to coding (Graneheim & Lundman, 2004).

Following a search for documents online, as well as discussions with the University Athletic Director and Campus Recreation Coordinator, five documents were identified for inclusion: the 2016-2017 Sport Club Handbook, the Varsity Student-Athlete Handbook, [University] Athletic Trainers Association Handbook, a Return to Play protocol, and the Sport Concussion Assessment Tool – 3rd Edition. Each of these documents was thoroughly reviewed. Documents were then analysed in relation to specific content areas of the present study. Based on discussion between the researcher and supervisor, a table (Table 2, presented in the Results) was created to organize the content within the documents. Table headings referred to content that was relevant to injury treatment and the mental health of injured athletes (e.g., directs to treatment options for physical injury, identifies injuries as a mental health concern). These content areas were developed based on some previous literature and the discussion between the researcher and supervisor regarding information considered to be relevant to the present study. Check marks were used to indicate what content areas are included within each document.

Trustworthiness

To conduct research in a useful and responsible manner, researchers should be concerned with trustworthiness relating to the research procedures (Graneheim & Lundman, 2004). Qualitative research focuses on three intertwined aspects of trustworthiness: credibility, dependability and transferability (Graneheim & Lundman, 2004). By aiming towards a high degree of trustworthiness, this study is better able to inform policies and strategies to protect injured athletes from suffering poor mental health.

Credibility. Credibility refers to how accurately the research addresses the intended problem (Lincoln & Guba, 1985). Within interviewing this is partly achieved by ensuring participants are well-informed (Rubin & Rubin, 2012). This research only involved participants who had lived-experiences that are congruent with the research problem. For this reason athletes must have been impacted by an injury of at least moderate intensity (Peterson et al., 2000). Limiting participants to those who have been injured within two years helps to ensure that individuals accurately remember their personal experiences. From a constructivist worldview, individuals gain understanding through their experiences, and although participant experiences may vary, each perspective is seen as valuable to the research (Creswell, 2014). Maintaining confidentiality and confirming that participants are aware of this may help ensure that participants speak honestly and not in a way that they would personally benefit or experience embarrassment. Krefling (1991) stated that prolonged engagement with participants helps improve credibility by allowing the researcher to become adequately submersed in the subject material. As the lead researcher of the present study has many

years of experience within university rugby, data may be more accurately understood and credibility is improved.

Triangulation, the merging of multiple perspectives to confirm findings of the data, is another strategy to improve trustworthiness, especially credibility (Krefting, 1991). The current study employed both triangulation of data methods and triangulation of data sources which improves the credibility of the study (Krefting, 1991). Data from coach and player interviews were integrated in the results. In this way, triangulation of data sources was achieved. Similarly data from interviews and data from the document review were integrated, specifically related to the university context. This is an example of triangulation of methods.

Dependability. Dependability deals with the consistency of results (Krefting, 1991). Although qualitative research often focuses on unique situations, transparency and detailed reporting of research procedures is an important way to demonstrate research dependability (Lincoln & Guba, 1985). Research procedures are presented as clearly as possible so that readers may understand the research methods in addition to the researchers' rationales for decision making.

Transferability and dissemination of findings. Transferability refers to the applicability of the results to a wider population (Lincoln & Guba, 1985). Although researchers are able to provide recommendations about how results can be transferred to other settings, it is the responsibility of the reader to decide when results may be transferred to a different context (Graneheim & Lundman, 2004). Detailed descriptions of culture, context and research findings are presented in order to help readers determine transferability. Although it is likely that the results from this sample of university rugby

players may be applicable to other contexts, such as for the management of injuries within other university athletic teams, there will be situations in which generalizing data will not be appropriate. As the research intends to improve how injuries are managed within university sport, disseminating the results is a crucial part of the research process. Findings will be given to athletic departments as well as any participants who indicated that they would like to receive them.

Ethical Considerations

A priority of research is to ensure that no harm is done to participants (Rubin & Rubin, 2012). As the current research involves the experiences of potentially vulnerable participants, it is especially important to consider ethical concerns. Support for the study (Appendix G) was obtained from the Athletic Director of the University from which participants were recruited. Although the research is intended to benefit injured athletes in the future, a priority of the research process is to treat participants honestly and respectfully. Rubin and Rubin (2012) stressed that it is important not to pressure participation. Contribution should be completely voluntary and interviewees not feel forced to answer any questions. All participants voluntarily agreed to be interviewed and no incentives were offered. Before each interview began, the interviewer discussed ethical implications with participants and confirmed they understand that they may cease participation at any point. All participants agreed.

This project was approved by the Dalhousie Research Ethics Board. After approval was given, an amendment was made with the purpose of expanding the inclusion criteria in order to include female participants who would otherwise not have been able to be included.

Informed consent. It is ethically important that participants give their informed consent to being studied. This involves fully informing participants of the purpose and methods of research and receiving consent willingly before data collection (Willig, 2008). Willig stated that achieving informed consent includes; no deception, the right to withdraw at any time without fear of penalization, debriefing after analysis allowing participants to have access to data, and confidentiality should be maintained throughout the process. All participants read and signed a consent form before their interview (Appendix D). The interviewer answered any questions that participants had before data collection began. All participants willingly signed the consent form. Each participant was told they would be able to withdraw their consent for up to two months following the date of their interview in which case their data would not have been used. None of the participants chose to do so.

Confidentiality and anonymity. Based on the nature of the data collection, anonymity was not able to be achieved. To strengthen confidentiality any personal or identifying information about participants which they had not agreed to was not disclosed. To respect the privacy of participants, efforts were made to maintain confidentiality, such as the replacement of participant names with participant numbers in study results. Ensuring complete confidentiality for the current study was challenging based on the in-depth data the study collected. Despite efforts to protect confidentiality, each participant was made aware that they may be identifiable based on the information they provided, as part of the informed consent process.

Risks and benefits. As injured athletes may have been suffering from mental health problems, interviews could have potentially caused participants distress. As a

result it was important to inform participants that they could have paused or ended participation at any point. Additionally, as it is difficult to ensure confidentiality, participants were informed that the information that they have provided may be potentially embarrassing or harmful.

All athletes and coaches who participated in the study received an information page (Appendix H) about mental health services and resources on campus following interviews. Long-term this research intends to improve how injuries are cared for, specifically within the teams that were studied.

Reflexivity

As data collection and interpretation are impacted by the characteristics and experiences of the researcher, it is important to engage in a process of self-reflection called reflexivity (Hennink, Hutter, & Bailey, 2011). “Reflexivity is a process that involves conscious self-reflection on the part of researchers to make explicit their potential influence on the research process” (Hennink et al., 2011, p. 19). In the present study, there were several ways in which the researcher’s personal characteristics may have influenced the research process.

The gender of both the interviewer and the interviewee are important in research because the interview takes place in a society that has differing masculine and feminine identities (Fontana & Frey, 2000). Pollner (1998) found that both male and female respondents report higher rates of mental health problems when being interviewed by female researchers. It was thought that both real and imputed gender differences can cause discrepancies in interview data, and that male interviewers were seen as more judgemental, whereas female interviewers were seen as more interested and sensitive to

mental health issues (Pollner, 1998). As a result, it is likely that female researchers may be able to gather more accurate data from mental health interviews (Pollner, 1998).

Although the interviewer of the present study is male, which may have limited full disclosure of mental health problems, this characteristic may have been beneficial for participant recruitment. Men are often unwilling to participate in mental health research and as a result, many studies do not have equal gender representation (e.g., Buchanan, 2012; Eysenbach et al., 2014; Farrer et al., 2013; Reavley and Jorm, 2010; Regehr et al., 2013). As a male and a member of the men's rugby team included in the study, the lead researcher may have been better able to recruit male participants than a female researcher.

Additionally, Fontana and Frey (2000) suggest that typically interviews exist within a hierarchical relationship. As the interviewer for the present study was older and had more rugby and educational experience than most athletes being interviewed, younger athletes may have perceived themselves to be in a subordinate position, whereas older players and coaches may have felt more comfortable in the interview and confident in their own opinions. An effort was made to make all participants feel comfortable and that their experiences and perspectives are valuable to the research. In order to avoid influencing the interview results, efforts were made by the researcher to avoid giving his own opinion (Fontana & Frey, 2000). In order to manage bias during the research process, interview questions were based on previous literature as much as possible. Additionally, effort was made to avoid asking leading questions. Each participant was asked before their interview to answer with their honest opinions. Follow up questions

were often asked to gain clarification so that data analysis was not based on researcher assumptions.

Summary

This study uses a qualitative description method, relying on social constructivism as a philosophical underpinning. Semi-structured interviews were conducted with eleven rugby players and two rugby coaches. Interviews were recorded, transcribed, and analysed using thematic analysis. A document review of information provided by the university to student-athletes was conducted and analysed using content analysis. Participants were well-informed of how their data would be used and offered their informed consent.

Chapter 4: Results

The purpose of this study is to understand the experiences of injured athletes and their surrounding environments, with the goal of answering the research question: What are the risk and protective factors that influence the mental health of university rugby players following athletic injury? Data presented in this chapter includes quotations from interviewed players and coaches as well as the results from a document review. These data are presented within seven themes: athlete mental health profiles, injury characteristics impacting mental health, other individual level factors, interpersonal relationships, the team environment, the university context, and factors at the societal level. Results are organized based on an adapted Socio-Ecological Model, which has provided the conceptual framework for this study. This model was used to conceptually guide the research design, including interview questions, as well as the analysis process. Therefore, the results have also been presented in this manner. Prior to presenting these results an introduction to the study participants is provided.

Study Participants

Thirteen participants were interviewed for the study. In addition to a coach from each of the men's and women's teams, eleven players who had experienced injuries within the past two years were interviewed. Five of the participants played for the women's team and six played for the men's team. Players ranged from 18 to 27 years of age and past rugby experience ranged from 5 to 20 years. Five participants were in their first year on their current team, two in their second year, three in their third year and one was in their fourth year. Participant academic year ranged from first to sixth. Eight different injuries were sustained (Table 1). Length of playing time lost ranged from ten

days to career-ending injuries. During this chapter participants will be identified using their participant number (See Table 1). In Table 1 participants are organized based on the timing of their interview. When discussing ideas conveyed by multiple participants, the term ‘few’ has typically been used to refer to two or three participants, several typically refers to four to six participants and ‘most’ typically refers to seven or more participants. Both coaches were former players of their respective teams and had graduated from the University. The coach of the men’s team was in his third year as a coach of the team while the women’s team coach was in her fifth year. Both still play rugby themselves.

Table 1

Athlete Participant Characteristics

Participant #	Gender	Age	Years played rugby	Injury	Length of playing time lost
1	F	20	6	Soft tissue damage	3 weeks
2	F	22	8	Ankle sprain	5 weeks
3	F	23	10	Jammed/rotated vertebrae	1.5 years
4	F	24	6	Separated shoulder	1-2 weeks
5	M	27	20	Dislocated elbow	On-going – approx. 3 months
6	F	20	5	Jammed collarbone and ribs	3 weeks
7	M	21	8	Concussion	On-going – likely career ending

8	M	18	5	Concussion	4 weeks
9	M	22	7	Concussion	10 days
10	M	21	5	Torn Achilles	On-going – approx. 6 months
11	M	20	7	Concussion	On-going – likely career ending

Athlete Mental Health Profiles

The first theme presented incorporates participants’ perceptions of their own mental health following injury. None of the participants experienced mental health in the same way as each other following their athletic injury. As expected, few athletes felt that their injury had only a small impact on their mental health, whereas others described their injury as a very challenging experience. Several participants identified experiencing depression or depressive symptoms following their injury. Participant 9, who had a concussion causing him to be unable to play for ten days, identified experiencing fairly mild emotions following his injury. He said, “I haven’t had much trouble with my mental health for injuries, I’ve always been able to get through and deal with it, and be back to normal pretty quick.”

Alternatively, several athletes indicated their injury had a large impact on mental health while not resulting in mental illness. Participant 10, who tore his Achilles tendon, stated:

Honestly like that month of October was like... I don’t know if I could call it like. Like I felt depressed. I’m not gonna go out and say it was like a, what you would

consider, a clinical depression of some kind, but I was definitely like noticeably in the dumps. I was really upset, like it was not fun at all. Really, really shitty.

However, other participants identified experiencing depression following their injury. This included Participant 3, who jammed and rotated her T3 and T4 vertebrae. She recalled:

I was like pretty down because it definitely was one thing that. There's like a couple different things that happened at that point in time in my life. But it was one of the things that led me into like spiralling downwards into a depressive episode. Um, and yeah, a lot of things happened with that, like that was when I was first, I guess like as a result, I was first put on medication.

Participant 1, who had soft tissue damage, also expressed experiencing depression following her injury:

I had a bout of depression, like a big bout of depression last year, around November.... because it was just, I couldn't do anything. Like I'm used to working out at least 2 times a day. I'm always in the gym. I'm weight training. I'm running. I'm doing something like that and it completely took me out of that whole world.

In summary, injuries had a range of impacts on mental health as perceived by participants. Many factors, which are outlined in the following themes, were found to influence the extent to which injuries impacted mental health.

Injury Characteristics Impacting Mental Health

This theme refers to the specific characteristics of each participant's most recent injury and how these characteristics impacted participants' mental health. As the focus of

the study is athlete mental health following injury, all student athletes shared the experience of suffering an injury; however across individuals there were significant variations in their injury experience and its impact on their mental health. Even though some of the athletes experienced the same type of injury (e.g., concussion), the perceived severity of the injuries may have differed due to: pain experienced, the physical treatment of the injury, and other characteristics of the athletes' specific injuries. As a result, each participant had a unique injury experience. Characteristics of the athletes' injuries were found to be important factors influencing the mental health of participants and are presented within this theme. Five sub-categories are identified within this theme including: athletes' perceptions of injury, playing time lost, impacts on education, pain and limitations to daily functioning, and management of the physical injury.

Athletes' perceptions of injury. There are many different injuries that occur within sports. Of the eleven athlete participants, eight different injuries were sustained (Table 1). Concussion was the only injury that multiple participants (4) experienced. All other injuries were only represented once by participants. The *visibility of the injury* played a key role in impacting how the athletes perceived their own injury as well as how they expected it to be perceived by others. It was felt that injuries that were visible to others were accepted more by teammates and gave the athlete a legitimate excuse to not play. Participant 4, who separated her shoulder, reflected on the visibility of injuries and how she felt that influenced the perceptions of others:

When you see a physical injury, like someone in a cast, people are much more accepting. But there are so many conditions, those that are invisible conditions, such as mental health conditions, or say my shoulder that wasn't actually in a cast

or anything, or say my neuropathic pain disorder. What I've come to learn is that people can't understand what they can't see, but at the same time people choose to not understand it or not get to know it and they just make assumptions.

She identified the visibility of her injury as a challenge and as a potential barrier to social support. She felt it was difficult for others to understand her injury because of its nature.

Participant 6, who jammed her collarbone and ribs, perceived her injury to be less common and expressed dissatisfaction with a lack of standard treatment procedures for her injury. She felt, in some ways, her injury may have been harder to deal with as a result. She stated:

In some sense it might have been like easier compared to something that was like broken just because like obviously it wasn't.... And I think as much as it would have been worse to have something broken or that it made it difficult to not have a full like, that's what happened, this is what's wrong, this is how much time you need off. Like it was hard having it based on my judgement and having like I had to be like, how painful is it? Can you do this? How far should you push yourself? How far shouldn't you? Because it wasn't like a strict box with the answers. So I think that made it harder in some senses than like a normal, or not normal but like a standard medical term injury.

Participant 5, however, had a dislocated elbow and was in a cast following the injury for the remainder of the season. Participant 5 expressed relief to a certain extent because of the injury he sustained. He felt his injury removed his choice of whether to play while injured or not, and was content with not having to make that decision, especially with the consequence of potential judgement from others. He explained:

So it was pretty rubbish and like, I think it was good that it was a major injury so you're kinda forced not to play. I think it would have been worse if it was a minor injury cuz then I'm kinda stuck with that decision of, I can play but I'd be pretty rubbish or I can not play and everyone will think that I'm a bit of a pussy. So at least it was major.

With reference to injury type, it was very common for participants to distinguish between concussions and other physical injuries. Many participants identified a potentially greater link between concussions and poor mental health compared to other sports injuries. For example, Participant 7's concussion had led him to remove himself from rugby. He distinguishes between concussions and other injuries based on the potential long term or permanent impacts of concussions on his life outside of sport. He stated:

That's how I differentiate concussions from other kind of injuries. Like with my shoulder injury, with all my other injuries, I was willing to even potentially get back in the game earlier even when I'm not fully rehabilitated and willing to put it on the line because I know whatever I did isn't going to be life-altering you know? It might hold me back a couple months but with your head it's not really a choice you know what I mean? I'm not willing to risk my entire future on 1 rugby game cuz that just doesn't make a lot of sense.

Similarly, Participant 9 expressed concern towards his own health following his concussion. He revealed:

I was still throwing up into the night so I think that definitely had an impact on it, just kinda worried me. But that went away, the next day it was just the headache,

dazed, fogginess. Ya, just concerned overall. There's obviously a lot of things going on in the media about concussions and things like that. So I was concerned. Both participants expressed a fear towards permanent damage as a result of their injuries. Participant 9 also referred to increased attention for concussions within the media. Several participants recognised this, and identified it as a source of fear.

Playing time lost. Although many injuries require a gradual return to play, this sub-category is defined as the amount of time athletes were unable to participate in games or practices following the onset of injury. The length of playing time lost due to injury varied significantly between participants. Two participants stated they would likely not play rugby again in the future as a result of their injuries. Both of these athletes with 'career-ending' injuries had suffered repeated concussions. The least amount of playing time lost by a participant was approximately ten days. When asked about the impacts of his injury on rugby involvement Participant 7, whose rugby career was likely ended due to his latest injury, responded:

Well inside of rugby.... it was made pretty clear to me, not just for my own perspective but from the doctor's too, that was kind of like the last one. I'm at that point where like preventable brain injuries like concussions need to be prevented. So I have to remove myself from scenarios where that will happen. So rugby's done.

Most participants had returned to play following their injury or expected to return in the future. However, the length of playing time lost was commonly identified as a key component of injury severity and an important risk factor that influenced the injured athlete's mental health. When asked about the severity of his injury, Participant 10 said:

It's definitely the most severe I've ever had. Like I've never had an injury where as soon as it's diagnosed you know you're sidelined for at least 6 months right, before you can really do like anything so.

Similarly, Participant 3 who was unable to play for a year and half following her injury stated, "I think out of all the injuries I've had, it's been the hardest to deal with because it sidelined me for the longest." However, Participant 9 recognised his time away from play as relatively short compared to other injuries. He stated: "If it takes you out and you can't play sports for 8-10 months that's gonna be pretty crappy as opposed to 2 weeks." Consistent with other participants, he believed that his mental health would likely have suffered more if his injury had sidelined him for a longer period.

Impacts on education. As all the injured athletes in the study were university students, a major component in each of their lives was their education. Although not all participants felt their injury had a large impact on their education, many identified their injuries as a factor that made school work more difficult causing stress, or as having a negative impact on their academic performance. Participant 8, who missed four weeks of the rugby season with a concussion, stated:

I think for school, like it held me back because in engineering we have so much homework and a big workload. I missed so much and trying to catch up and trying to keep up with the stuff that they're doing now was pretty tough.

Similarly when asked about the impacts of his injury, Participant 10 said: "So I missed a bunch of school in October, like missed two midterms and made them up and stuff. So it was just like, threw a wrench in the works for sure." However, other participants identified that their injury didn't cause a lot of academic stress because of the

timing of the injury or little pressure to achieve high standards. For example, Participant 5 revealed:

It's lucky that I'm on exchange so it's an easy year, like, it's not an important year. If it was my final year it would be more annoying especially with it being my dominant hand. I had to make up a couple of midterms cuz that was at the start of the midterm week but it's not been too bad, I don't really take a lot of notes anyways, pretty lucky.

School was recognised by several participants as a normal life stressor. Some participants identified that this stress grew while injured, due to either physical limitations or depleted motivation caused by the injury.

Pain and limitations to daily functioning. Most of the participants expressed feeling pain or discomfort following their injury. In addition to pain, many participants reported limitations to daily functioning during the recovery period as a result of the injury. Participant 6, who jammed her collarbone and ribs, expressed both pain associated with her injury as well as limitations to functionality:

I couldn't really sleep, anyway. Because like obviously I couldn't lie on my side, and this and that, and driving actually was quite difficult... Everything was a struggle every day. Um, which could get very frustrating like, like when you're not able to put your own shirt on without it taking 15 minutes is like annoying obviously and I think the worst was like the amount of pain. It wasn't just like I couldn't do it. It was like it was so painful that you had to take it so slowly, it was the worst probably in the first week just like the breathing, the sleeping.

Similarly, Participant 5 recognised limitations to his normal life caused by his dislocated elbow. When asked about the impacts of the injury on his life he responded, “Um, it’s been pretty shitty. I think, especially for me, because the other sport I do is bodybuilding, so it’s kinda taken that away as well because I haven’t been able to do weights now for six weeks.” Other participants also identified that their injury limited other interests besides rugby. Participant 3 stated:

And with the rest of my life I was like really frustrated because I couldn’t do anything else... I couldn’t play hockey which I played my entire life, so it was really rough because I like found myself just like bored a lot of the time and unable to do the things that I wanted to do, so that was really rough like watching from the sidelines. Um, yeah it was pretty disheartening.

Management of the physical injury. All participants received some form of medical treatment. The nature and duration of treatment varied significantly ranging from being evaluated by a doctor to long-term physiotherapy and chiropractic treatment. For example, the treatment for Participant 3 was quite extensive:

I was going to physio every second day, for pain management mainly but at the same time they slowly worked, it was like the vertebrae so they slowly had to get those moving again so I was going every second day, doing that, and that was for about a year. Um, I went to see an osteopath as well and a chiropractor but when I went to see the chiropractor, they ended up making me more sore, I think something might have got pinched or something like that.

Other athletes found the management of their injuries to be boring, specifically those recovering from concussions. Participant 11, one of the athletes whose injury was likely career ending, stated:

And with concussions, they don't really heal and like you're just supposed to sit in a dark room on your own for hours and hours a day, and it's just the most depressing thing. Like there's no other injury that's kind of like that.

Only one athlete identified stress associated with financial costs of the treatment of the injury. Participant 5 stated:

I think another like, rubbish part of it was, obviously I had medical bills. And then not being able to work at the same time – that was like an added stress. So I got that sorted out, that was nice, but for about 4 weeks that was probably the worst stress of all. Like six grand in medical bills.

Although the duration and type of treatment varied substantially, most athletes identified treatment as an additional stress during the recovery period. However, participants did also recognise the benefits of injury management during the recovery process. For example, Participant 5 recognised the treatment of his physical injury as a source of physical improvement leading to an improved mood. He said, “going to the physio the other day, like you don't expect to feel so happy, but when you see progress I guess it's a nice feeling so. Ya there's been some good bits to it as well.”

Summary. The injuries participant's sustained varied significantly based on individual injury characteristics. Participant mental health was significantly impacted by these characteristics, based on the specific injury each athlete sustained. The impacts that injuries had on participants' lives, both within rugby as well as in other areas of their

lives, were commonly thought to be important risk factors when considering the extent to which the injury impacted mental health. Additionally, the management of each injury impacted the athlete's mental health, either in a positive or in a negative way.

Other Individual Level Factors

This theme is comprised of individual level factors outside of participants' latest athletic injury that either served as a source of risk or protection for athletes' mental health. This is categorized by personal characteristics, behaviours, experiences or other factors specific to the individual. Four main sub-categories were identified within this theme including: benefits of rugby to the individual/participant identity, injury history, cognitive coping strategies, and help-seeking behaviour.

Benefits of rugby to the individual/participant identity. Although there was a large range of rugby-related experience between participants, many of them recognised sport or specifically rugby as part of their self-identity. Participant 1 expressed feeling that her injury was damaging to her athletic identity:

You realize that you are small when you can't do anything, and you're like, your identity is taken away, in a sense.... I identify with sports and physical activity. Like its part of me, so when you go, no you can't do that anymore it's just like, what do I do?

One of the interviewed coaches expressed similar ideas. When asked why the mental health of some athletes may be impacted differently than others he responded:

Yeah, probably how much you associate yourself with how, with sport. Right so I think a lot of players, especially in university, maybe they're struggling with school or maybe they, you know, aren't sure with what they want to do with their

lives but they find sport as something that is a rock. Um, and so if they were to get injured and they can't play rugby anymore, well that takes away a big part of who you are. Right, and I imagine that can be incredibly challenging.... I find so much of my happiness through rugby and I think a lot of guys do, and to have that taken away, like a big source of your happiness, that'd be tough so I, to get back to the original question, I think the breadth of your interests and the breadth of what you identify yourself or through, will definitely effect how you respond to injuries and mental health.

All of the athletes identified ways in which rugby benefitted them which included happiness, a source of rigidity to one's schedule, improving physical and mental health, a source of friendships, and as a coping strategy in itself. Participant 8 explained:

Cuz I know a lot of people play rugby to get their mind off other things. It's almost like an escape. You forget everything else once you're on the field playing. And so that'd be tough not having the place to destress almost.

This was similarly presented by Participant 5: "I think it's harder when you do get injured because that coping strategy for other parts of your life gets taken away and you just have another added stress." And by Participant 4:

I almost felt maybe rugby in and of itself was a coping strategy for my roommates because I felt so liberated, so empowered to have a life beyond my shitty roommates, but when I did have the injury... the stress even got more because I had bad relations with my roommates but now I'm even having bad relations with my rugby.

Almost all participants agreed that they used rugby as a coping strategy either consciously or subconsciously. While injured, athletes not only gained a source of stress but lost a coping strategy they used to combat other sources of stress including poor relationships and academic pressure.

Interestingly both athletes who were forced to stop playing rugby due to their concussions regarded their involvement with the sport as a positive experience. When asked about the culture within rugby Participant 11 explained:

I think it's a great sport, I'd recommend it to anyone. I'm definitely making my kids play. And sure it can be dangerous sometimes and right now overall, if I didn't play rugby I'd definitely be a different person. I don't think I'd be the same and not just mentally, because of the concussions but if I could do it all again and still get the concussions, I would do things differently but I definitely wouldn't quit rugby. I would definitely keep it cuz there's just so much more than stepping on the field and stepping off.

Similarly, Participant 7 said:

Would I trade having not played rugby at all to deal with this, to not have to deal with this? No. I'm glad I went out there and I'm glad I played... But I think all in all you know, I don't look back on having played rugby and the injuries that it, that I have received and look back on it and think of it as a negative experience. I look back at it as a positive one.

Injury history. Participants' attitudes towards their injuries was shaped by their previous injury experiences. Injury history is included within the theme 'other individual level factors' because it impacted individual injury experiences but is not a characteristic

of participants' most recent injuries. Athletes who had experienced many injuries before and athletes who had experienced relatively few previous injuries both identified ways in which their past shaped their most recent injury experience. Participant 6, who identified having a fairly limited injury experience, stated:

Obviously it's difficult if you're constantly injured but I do feel if you're constantly injured you have a better understanding. Cuz coming out of it I have a better understanding of you know, when you're injured you have to take that time and like get better and do what you need as opposed to when it first happened it was like, kinda shocking and very overwhelming to accept it, and I think I've gained respect for people, like my friends that have gotten injured and had to be out.

In this example, previous injuries may have been a protective factor. However, injury history was also found to be a risk factor for other athletes. For example, Participant 5 expressed frustration with repeatedly being injured. When asked about the emotions he experienced following his dislocated elbow he said:

Ya initially I think I was just kinda angry especially when I first did it, like I was really angry. More than like, more than in pain, I was, just because I've had so many injuries and it just seems like bad luck I guess. There's some times when it's pretty like, depressing, like sad.

Concussions were again seen as different from other injuries with regard to injury history. When asked why concussions were seen as unique one of the coaches responded:

Like everything else heals pretty well versus your head, I suppose if you put your shoulder out enough times you're going to need to have surgery to fix that, but

like you get enough concussions, you get concussions very easily. If I break my leg, what are the chances I'm going to do that again, probably slim?

This sentiment was also reflected in what Participant 7, who experienced a concussion, said:

Like I've found that between my first and my third and my fourth. Like eventually I got to the point where it's, you know like this one, I don't think I got hit harder than on my first or second concussion. I just think I kind of got hit straight and, I don't want to say repeated like it's not like I'm Muhammad Ali here getting hammered, but you know like, kind of that persistent kind of head trauma I think they do add up.

Overall, participants felt that having multiple concussions not only increased the risk of experiencing concussions in the future, but also identified that the impacts of the concussions may be cumulative.

Cognitive coping strategies. As expected, participants felt athletes' abilities to be resilient following an injury has a direct impact on their mental health. The ability to remain optimistic and think positively was recognised as an effective coping strategy and a protective factor. When asked if he used any coping strategies while injured Participant 10 replied:

I would say that the best coping mechanism has been the potential to come back. So like the thought that I might get to play again next year, has been really helpful cuz if it was just like ended there, like purely, you're done, then that's, you know, that sucks. But ya the thought of potentially coming back was helpful in dealing

with it for sure.... Being optimistic about being able to play again. Cuz all I wanted to do was play rugby, and when that was taken away it's just horrible. Similarly, Participant 2 identified thinking positively about her return to play. She stated, "I think that I'm a resilient person and with my injury I knew that I wasn't going to be back but I knew that eventually I'd be able to get back into the sport once it's healed and all that." Although these participants were able to use positive thought as a coping strategy, other athletes may have a more difficult time remaining positive. Participant 6 said, "I think it was definitely an up-and-down and definitely started probably down for me just because I am someone that has been known to kind of beat themselves up. Very hard on myself." Similarly, Participant 11 identified difficulty having a positive attitude following his injury which resulted in his rugby career likely ending. He said:

Um, like I always try to think of it like, you're not quitting on them, like they know that you'd wanna play. But there's only so much that I think you can be positive about just cuz like it's a pretty crappy situation.

Help-seeking behaviour. Participant help-seeking behaviour included the use of formal as well as informal resources intended to benefit the individual in a positive way. Two participants identified the use of formal resources for managing their mental health in response to their most recent injury while an additional participant identified using formal resources while managing a previous injury. Participant 4 identified concerns about the accessibility of formal resources on campus but acknowledged them as beneficial to her. When asked if she would use on-campus counselling services she responded:

I have used it. Maybe, at least once related to my injury. But it is so hard to get in. I feel like a lot of people just turn away because they don't want to wait... But it is something that I have gone to and been helped.

Participant 3 also identified using formal resources on and off campus and saw both as beneficial for her mental health:

My issues, I like, have this psychologist that I gained a really good relationship with back home, so I don't use a lot of the [University] resources I mean, like I have gone and gotten an appointment right away if, at [University], I was like really like, really needed to see somebody, and I have used that.

Many of the other athletes identified seeking help only in less formal ways.

Although many athletes expressed benefitting from talking to friends or teammates, most participants expressed limited interest or perceived benefit in more formal mental health resources. When asked if he felt like he needed help managing his mental health while injured Participant 10 said:

I don't feel like I did. Not like in a clinical sense. Like I didn't need to go talk to a professional about it. Just talking to my friends about it was helpful for sure.

Overall, participants who sought help felt that this had a positive influence on their mental health. Although some participants did exhibit formal help-seeking behaviour, most participants exhibited only informal help-seeking behaviour. Both forms of help-seeking can be seen as protective for injured athlete mental health.

Summary. Overall, characteristics of the individual, other than the most recent injury, were found to be important factors influencing injured athlete mental health. These included: benefits of rugby to the individual, athlete injury history, cognitive

coping strategies and help-seeking behaviour. The benefits of rugby participation and injury history were found to be potential risk factors for injured athletes, contributing to poor mental health in several participants following their injury. Positive cognitive coping strategies and help-seeking behaviours were found to be beneficial for many participants.

Interpersonal Relationships

This theme is characterized by the interactions participants described with people, both within and outside of the team, which had an impact on their mental health following their most recent injury. Teammates and coaches were identified as people injured athletes would often discuss their injury with. Some participants additionally identified seeking support from people outside of the team including parents and non-teammate friends. This theme is comprised of three sub-categories including: teammate interactions, interactions with coaches, and interactions with those outside of the team.

Teammate interactions. Teammates were expectedly seen as a key source of social support following injury. Almost all participants felt that, overall, they were satisfied with the support they received from teammates. When asked if her teammates were supportive following her ankle sprain Participant 2 stated, “Ya they were helpful, really helpful. They helped me the first day get the stuff I needed. And they helped afterwards seeing how I was doing and everything.” Despite feeling supported by their teammates, several study participants identified feeling frustrated or annoyed by interactions they had. Feeling “babied” or “pitied” by teammates was identified as a cause for this frustration. As an example, Participant 1 expressed feeling annoyed that the interactions she had with teammates regularly focused on her injury:

So it was kind of annoying they were inquiring so often or whatever, I'm like they would see me in the academic buildings and be like, 'how are you doing? How is your arm?' 'Just, I'm fine. Like, I'll see you tonight at practice, like, leave me alone'. So it made my relationships kind of, I'd even say toxic for a little while.

Similarly, Participant 10 identified that while his interactions with teammates reminded him of his injury, he simultaneously felt supported by the team:

Everywhere you go everyone's feeling horrible for you and it just makes it worse cuz you're like, 'I don't need your pity.' But like what am I supposed to say right? ...Like it sucks because it makes you remember the fact that you're hurt and people are constantly telling you about it. But at the same time it does act as a support system for sure because as soon as people recognize it and they don't just ignore it, it does make you feel like people care about you.

Interactions with coaches. Most participants expressed feeling supported by their coach following their injury, and that their coach cared about their health and managed their injury accordingly. Participant 8 reflected on the interactions he had with his coach while injured:

[H]e said he doesn't want me playing if I'm just gonna get more hurt because they want me back as soon as possible. And every time he saw me throughout that he would ask how I'm doing, what I'm doing to get better. So he actually showed an interest which was really good.

Participant 7 expressed a similar sentiment:

We have the same kind of friendship we've always had. I guess I played with him before too so he kinda knew where I stood. He knew if I thought it was ready to

return then I would soDidn't push in any way to return before I was ready and understood when I eventually told him straight up, I'm done. You know what I mean? So, 'it's awful, I feel terrible for you bud, but I respect your decision.'

Although some participants expressed feeling less involved with the team and coaches following their injury, most were content with the level of support they received from their coach.

Interactions with those outside of the team. It was commonly expressed that teammates may be able to understand the injured athletes' experience better than those outside of the team. Although more participants identified teammates as better sources as social support than those not connected to the team, some participants had the opposite perspective. For example, Participant 3 identified feeling a separation from her teammates after her injury and reached out to others for support. She said, "So I had like my close friends at school that I started to rely on more and they ended up being like better supports than my team ever had been."

Several participants identified seeking parental support specifically. Participant 5 said:

I don't know anything specific but I always speak to my mum about things like that, like I've had quite a few times where I've felt like, not necessarily depression but verging on depression where nothing really seems important and things like that so I don't know if there's anything specific but there's been. I would have always talked to my mum or, she's probably the only person who I would kinda open up to.

However, some participants were cautious about seeking support from others, as they felt as though friends outside of the team may not understand as well as teammates.

For example, Participant 9 said:

Other friends, that aren't through rugby, same thing. But definitely there's more of a connection with the guys on the team just because it's something that could happened to them or has happened to them so they know what you're going through, more likely than other people.

Team Environment

The team level was found to be an important aspect of the socio-ecological framework which impacted the individual. This theme is categorized by attributes of the sporting environment and the specific team participants played for. Three sub-categories were identified within this theme including: culture of toughness, comradery between teammates and guilt/"letting the team down". These common aspects of the team environment were found to influence the attitudes and behaviours of all athletes and, in that way, impacted the mental-health related experiences of athletes following injury.

Culture of toughness. Participants repeatedly identified that toughness was highly valued within the team context which impacted their attitudes and behaviours during the injury experience. This was found in interviews with both male and female participants. Most participants identified this as stemming from the high contact nature of rugby. When asked about the culture of the team Participant 8 responded, "Everyone's pretty tough. You have to be tough to play rugby.... You have to be able to take a hit and give one back." Similarly, Participant 1 said, "[T]he rugby culture, more than all the other sports I've played, you're supposed to be superhuman tough, get over it keep playing. Feel

the pain after the game.” Most participants supported these ideas that toughness was a requirement of playing rugby and highly valued within the sport. Several participants identified that toughness within the sport played a role in dictating their behaviour with regards to managing their injuries and mental health. Participant 9 said, “You kind of get respect from your teammates, and even your competition, when you toughen up and play through an injury.” Similarly, Participant 11 identified a connection between toughness and management of mental health. He said:

And I think in rugby too, like being tough is part of the team. You’re a tough guy, you’re playing rugby. So you don’t associate mental health with that. And I guess it’s not just rugby but all sports, the tougher you are, you don’t need this, you don’t need counselling, you don’t need all that.

Comradery between teammates. Almost all participants identified a strong bond between themselves and their teammates. This was seen as an important aspect of the team environment, which impacted individual behaviour during the injury experience.

Participant 9 identified:

As opposed to, you know, a lot of other sports I played growing up it wasn’t the same way at all. There wasn’t the same sense of comradery between the 2 teams, or even with your teammates. It was more kind of an individual sport, even though it was a team sport, there wasn’t the same brotherhood.

Similarly, one of the coaches reflected, “I wouldn’t have any friends if I didn’t play rugby. Everybody I know and hang out with is a rugby player, like the social aspect is arguably more fun than the playing.” The bond between teammates was found to be a very strong component of team culture, clearly identified in most of the interviews.

Several participants stated that they felt the bond between teammates derived from the nature of the sport, including its high level of contact. Participant 5 said:

I think you become closer in a contact sport like rugby than you would in like doubles tennis or even soccer where you're not really putting your body on the line you're just playing a sport. Like you're not going into battle with people so.

A coach similarly identified:

Not a lot of sports ask you to sacrifice your body in the way that rugby does, and I think that's why rugby culture is rugby culture. You're so close to everybody because you're literally throwing yourself at other people for them. Like I play soccer. I play volleyball. Not the same.

The concept of playing for teammates was commonly presented by participants. Taking hits for the team was seen by this coach and other participants as a contributing factor to overall team comradery. The nature of the game and the resulting team unity were often compared to other sports and considered quite unique. Comradery within the team impacted the relationships injured athletes had with teammates, creating a support system that played a protective role in the injury experience.

Guilt/“Letting the team down”. A few injured athletes expressed feelings of guilt as a result of not playing while injured. Although guilt may also be seen as an individual level factor, it is included in this theme because it was caused by team dynamics. This sub-category is an example of a factor at the team level being expressed through the subjective experiences of individual participants. For example, Participant 6 felt she let her teammates down by not playing through her injury. She said, “I think the biggest pressure was me thinking I owed it to my teammates to play and I was letting

them down by not being there”. Participant 7 and Participant 11 both of whom suffered multiple concussions, similarly expressed feelings of guilt when they were no longer able to play through their injuries. When Participant 11 was asked about how it felt when he made the decision to not play anymore following his most recent concussion, his response was:

Oh, it’s the worst feeling in the world. Since I’m still on the team it’s just really hard to watch and like know maybe you could be there helping your teammates out and you just quit on them cuz you were kind of a pussy. That’s just how I think of it.

Participant 7 similarly said:

I came to the first couple games. It was hard to watch. It was just like fuck, we could literally be doing better if I was playing. So that sucks to watch. Part of you feels like you're letting the team down but you know in your head and you know that you don't have a choice at this point.

University Context

The university context is characterized by the relationship between the rugby teams and the University they are associated with. Additionally, data that describes a direct relationship between participants and the University are included here, with specific attention to the influence of the University on injury management as well as mental health support. The two sub-categories found within this theme were: university resources and suggested improvements to campus mental health supports. The sub-category ‘university resources’ includes data from interviews as well as data from the

document review. Data within this theme were substantially more comprehensive because of the inclusion of the document review as well as coach interviews.

University resources. Prior to beginning data collection it was assumed that data from coach interviews would be especially important when analysing the relationship between the teams and the University. However, it was found that the coaches felt they had a fairly limited interaction with university administration. One of the coaches revealed, “[I]’ve never spoken to anyone in the [University] administration I don’t think... like, we had one email about a hazing policy sometime back when, like I literally don’t think I’ve ever spoken to anybody from [University].” When asked about the role of the university in how injuries are managed, the same coach answered:

Um, they certainly don’t currently play any kind of role in how we manage injuries. Um, I dunno, like, there’s national concussion policies and all that stuff and I would assume [University] would expect us to follow like any kind of guidelines but I don’t know that they. Like what’s the university gonna do, put in a policy to say you can’t, can or cannot play an injured, I don’t know if that’s [University]’s place, is it?

Although this coach identified perceived expectations of the university administration, this statement also suggests a belief that the University should possibly not be very involved in injury management, specifically in terms of policy implementation. It was often identified by athletes and coaches that the decision of return to play should be made by the player, as well as the coach and medical support when available. Another coach identified that having some guidance from the university with regards to injury management may be useful:

Ya I think that would be massively useful, um right now, as I was saying, we sort of do it at hoc. If there were some guidance on how to manage injuries I would certainly, I would certainly make use of those resources.

In terms of mental health support from the university, most participants were aware that the school offered various mental health resources. However, some felt that the mental health of athletes was ignored and that injured athletes were left to manage their mental health on their own. When asked how the mental health of injured athletes should be cared for, Participant 5 answered:

Ya I definitely think something, I think it's left as well, like there's nothing for athletes at all which is really rubbish. Especially in something like rugby where it's a common thing to get injured but no one really knows – there's no structure on how to deal with it.

As no mental health support was provided directly to injured athletes, participants felt athletes experiencing poor mental health were forced to manage this on their own. If an injured athlete were to utilize mental health resources operated by the University, the injured athlete would most likely have to individually seek them out.

In order to determine what formal University policies, procedures and resources were in place to guide and support the coaches and student athletes a document review was conducted. In total, five documents were identified and examined within this brief review; each of these documents were identified through discussions with members of the athletic department of the University and through athletic department searches. These are documents that are used to provide general information to teams as well as documents that include injury management procedures. The five documents reviewed were: the

2016-2017 Sport Club Handbook, the Varsity Student-Athlete Handbook, [University] Athletic Trainers Association Handbook, a Return to Play protocol, and the Sport Concussion Assessment Tool – 3rd Edition. It should be noted that, as both rugby teams are non-varsity, neither the coaches nor athletes in this study would have access to the varsity student-athlete handbook. However this document has been included in order to compare and contrast information provided to varsity and club athletes. In addition, varsity athletes are also likely prone to poor mental health following injuries and therefore it is important to review the information targeted to them as well.

Although all other documents are applicable to club athletes, it is possible that athletes may never personally use some or all of the documents. For example, the Athletic Trainers Handbook is given to trainers rather than athletes themselves and although the Sport Club Handbook is available online it is not directly given to athletes. However, during interviews participants were not directly asked about their knowledge or use of any of the documents included. Table 2 presents each of the documents and identifies in what capacity each one contains information related to injury management and athlete mental health.

Table 2

Summary of Resources Included in Document Review

Document title	Information on injury management	Directs to treatment options for physical injury	Information on athlete mental health/problems	Identifies or directs athletes to mental health resources	Identifies injuries as a mental health concern	Specifically identifies risk and/or protective factors for athlete mental health
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2016-2017 Sport Club Handbook	✓	X	X	X	X	X
Varsity Student- Athlete Handbook	X	X	✓	✓	X	X
[University] Athletic Trainers Association Handbook	✓	✓	X	X	X	X
Return to Play Protocol	✓	✓	X	X	X	X
Sport Concussion Assessment Tool – 3 rd Edition	✓	✓	X	X	X	X

All of the documents, except for the Varsity Student-Athlete Handbook, contained information related to the management of physical injuries. However, the Varsity Student-Athlete Handbook was the only document that discussed athlete mental health issues and identified mental health resources. None of the documents identified injuries as a mental health concern or any risk or protective factors for athlete mental health.

Although this document review only contained written texts used by the university athletic department, there were other potentially relevant resources found during the document search process. Some of these will be identified and briefly described.

Other resources reviewed (but not included in the document review) were those that are available to all students rather than only student-athletes. Some of these resources included: counselling services, on-line self-help, peer support, and mental health promotion information. The Varsity Student-Athlete Handbook was the only document included in the review that referenced any of these resources.

Additionally, some information and resources targeted directly towards student-athletes were not included because they were produced and operationalized by organizations external to the University. For example, a charitable organization called ‘the Student-Athlete Mental Health Initiative’ (SAMHI) was found to be present on campus and provide access to resources for both coaches and athletes specifically related to injuries and mental health through their website (www.samhi.ca). It is assumed that SAMHI targeted varsity teams more directly than club teams and that it was less likely for athletes on club teams (including participants of the study) to access the resources provided. However, this was also not discussed in participant interviews.

Suggested improvements to campus mental health supports. Many of the participants identified ways in which their mental health while injured could have been better cared for. Some participants felt that mental health services could be more accessible, several identified a desire for athlete-focused counselling and two participants recognized wait-times as a potential deterrent from seeking professional support. For example, Participant 10 felt that campus mental health services were slightly detached from athletes and that having them be introduced to athletes would encourage use. He said:

I think if there was someone who was a constant presence. At least the way I would see it is, being some sort of clinical, like disconnected person who you'd have to go and reach out to, seems a little weird right? Like that scenario, like talking to someone like that, to me, I don't see that necessarily as helpful. But if it was someone who was involved and at least showed their face and was like, I'm here. Rather than just a piece of paper on a wall saying, this is where your mental health services are. You know what I mean? So like some sort of personal engagement where they're like, just in case, we're here, my names whatever. I feel like that kind of, again, making it available would lead to more people using it. Cuz I think there's probably a lot more people that would use it than you would think. Like I said, in rugby culture, it's not gonna be something that's talked about necessarily so.

Another commonly supported idea was that injured athletes may benefit more from a counsellor or therapist who worked more directly with athletes. This topic was not initially asked about directly during interviews, but after it arose multiple times a question was added to the interview guide. Participant 6 said:

I also think that the counsellors at [University] aren't necessarily like, background in sports and mental illness. Cuz I do think it can be slightly different, an athlete's way of viewing things and self-destruction, should be treated slightly different than someone who isn't in a competitive sport.

Similarly, Participant 11 stated:

I think like a sports-related one would kind of be cool. I think that would kind of make you wanna go more. Ya, definitely sports-related would be something that

would push, at least for me, push me to want to go. Cuz like I'd think ok, this could actually help me, if I'd do this. Ya, now that you say sports-related, it kinda sounds more appealing than just like counselling.

It was consistently felt by participants that athletes would be more willing to seek help from counsellors that were sport-specific. Additionally, several participants felt that they would receive better treatment from a sports-specific counsellor than from a normal counsellor.

Factors at the Societal Level

This theme is characterized by common attitudes, values and behaviours within the societal level. Participant's perceptions of these societal factors and how they impact the injury experience are presented here. Two sub-categories were identified including: gender expectations and stigma.

Gender expectations. The impact of gender norms was discussed with both male and female participants. In both cases gender was often related to toughness. Both male and female participants felt that male rugby players were under pressure to conform to gender norms, especially related to toughness. Participants felt that female rugby players were also under pressure to exhibit toughness; however this was seen as defying traditional gender norms. Participant 7 discussed masculinity in rugby:

[T]here is a kinda macho, kinda man, culture almost to the game... I think there's just that, you know, that kind of desire to be macho or to be tough. Some of the ideas that go along with being masculine is being hard and tough and I dunno, masculine. Anyways, there is that push, 'be a man! Get out there!' 'Like, sorry man. I have a head injury.' Just cuz I'm a dude doesn't mean I'm an idiot.

He recognised a strong connection between rugby and masculinity and identified toughness as a component of masculinity. Additionally, athletes may experience pressure to behave in what is perceived to be a masculine way, including playing while injured.

When asked how femininity is perceived within rugby Participant 4 reflected:

I feel as a female playing, it's more empowerment because it goes against gender norms.... Also, I feel as a woman with pain, I don't wanna be a whiny woman, especially if I'm going to play the sport. I'm not a whiny woman. So I feel like that's important when it comes to being a female because if you start whining about injuries then they'll forget that you're even tough enough to play rugby.

This participant identified playing rugby as a source of empowerment for her, as a woman, by defying gender norms. Additionally, she also identified pressure to respond to injuries in what was perceived in a tough manner in order to experience this empowerment.

Although most participants believed both male and female rugby players felt pressure to express toughness, several athletes felt that female teams may be more supportive of injuries and mental health, whereas interactions between male players may be more constrained by pressures of masculinity. Participant 11 said:

I think girls could talk about things easier. But then again, a lot of the girls that play rugby are pretty hard core too. They're not like, you gotta be mentally strong. You gotta be physically strong to play rugby so. I don't really know much about how girl's injuries are taken.

It is important to recognise that none of the participants had first-hand experience playing on both men's and women's teams and therefore it was difficult for them to compare the impact of gender on injured athlete behaviour.

Stigma. As described in the background literature section, stigma is characterized as negative attitudes towards mental health issues or seeking help for one's mental health. Both personal stigma and the perceived stigma of others are presented in this sub-category. Some participants did use formal resources to manage their mental health following injury; however several identified stigma as a barrier to help-seeking behaviour. For example, Participant 8 felt that he would be willing to talk to a mental health professional if he felt it was necessary but he acknowledged that this may be uncommon amongst rugby players. He said, "I think most rugby players would be like, oh no, I can do it on my own, just like that. I know me personally, I'm open to talking to people about almost anything." Participant 11, when asked about his attitudes towards professional mental health support, said, "I don't think I'd be the guy to do it just cuz I see myself as mentally strong. I just wanna say like, hey I can do this on my own." Expressing a similar idea, when asked about formal mental health resources, Participant 5 said:

I think they'd be helpful. I think the hard part is to reach out and use them, especially in a sport like rugby. I think it's not that, in the modern day it's not looked down upon like it probably was like 5 years ago but I still think it's difficult to do.... It's a very non-judgmental place which is good but I still think within a rugby context there's still probably some stigma around, especially reaching out for help. Like even if it's in yourself, you think people will judge

you. So something like, it still seems like everyone's gonna think you're mentally weak or something like that?

Interestingly, Participant 5 indicated a recent change in negative attitudes towards help-seeking in sport. Participant 11 identified a disconnect between sport and mental health. He identified that although there is a strong comradery between teammates, it is limited with regards to mental health:

When you think of sport you don't think of mental health, like I said earlier. I just don't think people really know about it. Like I think rugby's a good sport, you get support from your friends. But you never really talk about how you feel.

Some participants felt that although teammates wouldn't be criticized for seeking professional help for their mental health, they would be unlikely to do so out of perceived stigma from within their team. Participant 9 stated:

I can see a lot of guys trying to avoid it. I can't see anyone getting a hard time for doing it. I would never give someone a hard time for using it, and if that's something you think you should be doing then definitely go do it. But I can definitely see a lot of people being resistant to it at first, just out of fear I guess of what people think.

Although it is difficult to compare using qualitative data and a small sample size, female participants seemed to be more willing to seek help than male participants. This is assumed as both participants who identified using formal mental health resources following their most recent injury were women. Additionally, male participants seemed to express more personal stigma towards help-seeking. This was shown by Participant 11. When asked about how masculinity related to help-seeking he said:

I definitely feel like, ya I don't need this, I can deal with this on my own, I'm a man. Is definitely kind of an attitude. And quitting I'd say is not like, it's like a defeat. You just lost. And the most alpha man wouldn't lose right, wouldn't quit.

Summary of Results

To explore the injury-related experiences of rugby players, eleven athletes who had personally experienced injuries were interviewed. As supplementary sources of data, two coaches were interviewed and a brief document review was conducted. Many factors that can influence mental health were identified in the data. Each of the athlete participants identified challenges they faced within their own personal injury experience, as well as ways in which they felt their mental health was improved or could have been improved.

Through all interviews, as well as the document review, seven themes were identified: athlete mental health profiles, injury characteristics impacting mental health, other individual level factors, interpersonal relationships, team environment, university context, and factors at the societal level. The first theme, athlete mental health profiles, describes the state of participants' mental health following their latest injury. Each of the other themes is characterized by groups of factors that could either directly or indirectly impact injured athlete mental health. These factors may act as either risk or protective factors, and in some cases, may act as both.

Within injury characteristics and other individual level factors, many factors were found to be key influencers of injured athletes' mental health, including playing time lost, pain and limitations to daily functioning, the benefits of rugby to the individual and the athlete's cognitive coping strategies. For many participants, these factors were some of

the most important influencers of mental health. Factors from other themes were found to have a less *direct* impact on injured athlete mental health. For example, within the 'team environment' theme, a sub-category of 'culture of toughness' was identified. Injured athletes described feeling pressure to conform to the perceived tough characteristics of their team which, in turn, impacted how they managed injuries as well as their desire to seek help for mental health issues. Additionally, the team environment as well as the university context were seen as important themes because of the ability to potentially create change or implement mental health promotion strategies. However, some participants identified that these factors had a large impact on their attitudes and behaviours.

Chapter 5: Discussion

Introduction

The purpose of this study was to identify risk and protective factors that influence the mental health of injured university club rugby players. As noted previously, the study was conceptually guided by an adapted Socio-Ecological Model (Figure 1). This model consists of five levels including: the individual level, the interpersonal level, the team level, the university level and the societal level. This model informed data collection and analysis and as a result, themes are representative of student athletes' mental health-related injury experience in relation to the model.

As a result of using the Socio-Ecological Framework, this study explored seven key themes related to the mental health of injured athletes: athlete mental health profiles, injury characteristics impacting mental health, other individual level factors, interpersonal relationships, team environment, university context, and factors at the societal level. Themes and subthemes are represented in Figure 3, which represents the risk and protective factors impacting injured athlete mental health, across each socio-ecological level. This chapter begins by discussing each theme and its key factors individually in relation to the literature. Following this, important intersections of factors are presented. These intersections are important aspects of the study findings which are also supported by the Socio-Ecological Model. The transactional nature of the model, in which levels commonly interact, is a key component of this study's framework (McLeroy et al., 1988). Additionally, implications for practice and future research are identified, as well as strengths and limitations of the study.

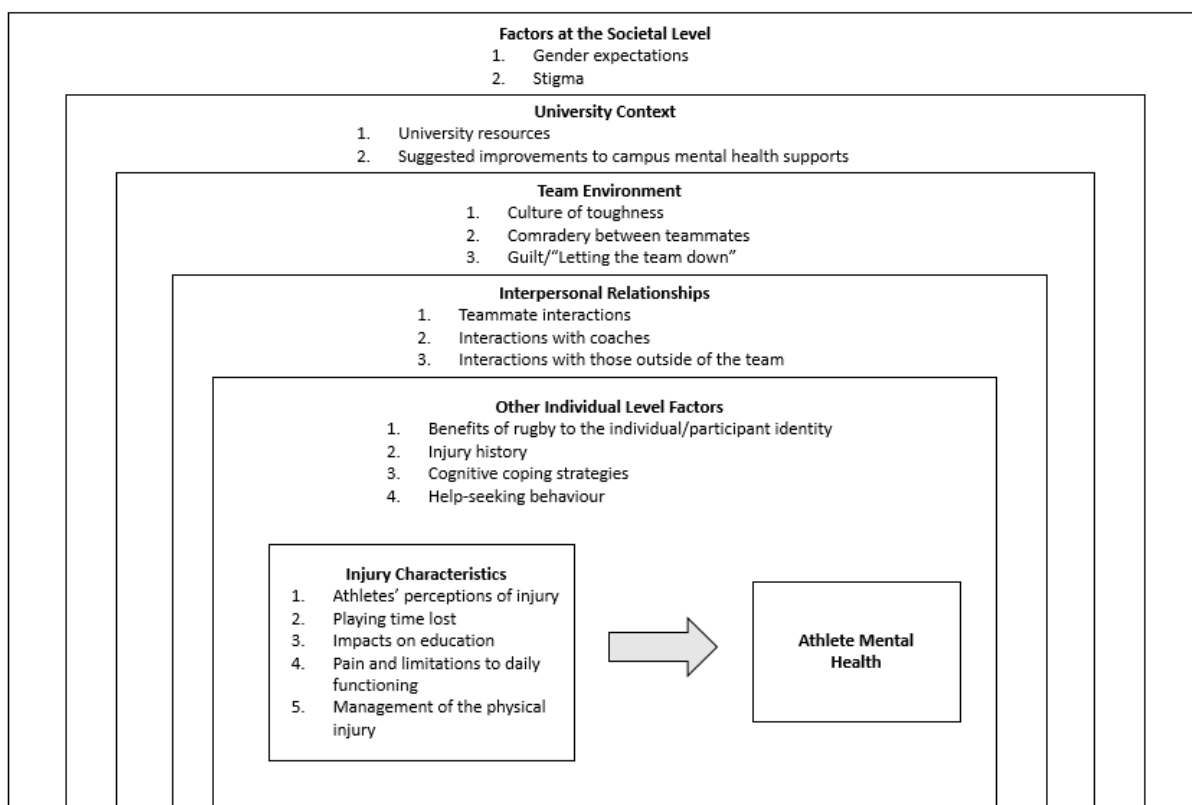


Figure 3: Themes and Sub-Categories Based on the Socio-Ecological Model

The Impact of Injury Characteristics on Athlete Mental Health

While individual mental health was found to vary substantially between participants, it is clear that all aspects of an injury (e.g., playing time lost, pain and limitations etc.) have the potential to be risk factors, to some degree, for poor mental health in university club athletes. Participants often discussed their mental health in relation to the emotions they experienced. As a result, participants' understandings of mental health may not have included each of the components of the WHO (2014) definition. Furthermore, participants often related mental health to mental illness, specifically, depression. Depression seemed to be talked about by some participants as an extension of poor mental health, as if concepts on the same spectrum. This was contrary

to previous literature which has conceptualized mental health and mental illness as related concepts that can be visualized on separate spectrums (Keyes, 2006). Although mental health and mental illness were rarely differentiated by participants, findings show that injuries may contribute to either poor mental health or mental illness (depression). Overall, the influence of injury on mental health ranged from having a small impact on some participants, to contributing to depressive episodes in others. This supports previous research which has found sport injuries put athletes at a high risk of experiencing depressive symptoms (Leddy et al., 1994) and depression (Appaneal et al., 2009). As previous research on injuries has focused on mental illness and mental illness symptoms, this study extends these findings by showing that injuries have the potential to negatively impact student-athlete mental health as well as mental illness. Although several participants in the present study did not identify experiencing symptoms of mental illness, all participants identified ways in which their injury negatively impacted components of mental health to a certain extent, including their *well-being* and their ability to *work productively and fruitfully* (WHO, 2014), for example.

Several important factors were identified relating to injury characteristics, including athletes' perceptions of the injury, management of the physical injury, pain and limitations to daily functioning and the impacts these had on playing time lost and education. These factors, when combined, are described as *injury severity*. According to Van Mechelen (1997) there are six components of athletic injury severity: nature of the injury, duration and type of treatment, duration of restricted sport participation, working (school) time lost, permanent physical damage from the injury, and financial costs. Unique findings in the current study include the recognition of pain and limitations to

daily functioning as characteristics of injury as risk factors for poor mental health.

Additionally, financial costs were only addressed by one participant; this was included in the management of injuries sub-category because costs were the result of medical treatment. Financial costs may be a much smaller component of injury severity depending on the health care system in place.

Permanent damage from the injury was not discussed by participants in the current study, except in relation to concussions: this was included in the sub-category of 'athletes' perceptions of injury'. Participants with concussions also indicated that their injury impacted their education, which confirms research by Halstead et al. (2013). However, participants who experienced other injuries also identified negative impacts on their academic performance. Overall, individual (rather than multiple) concussions were not found to have a larger impact on mental health than other injuries. This is consistent with previous research by Mainwaring et al. (2010), who found athletes with anterior cruciate ligament (ACL) injuries actually reported more emotional disturbance than athletes with concussions. Characteristics of each individual injury were found to be potential risk factors however; these characteristics are rarely modifiable, except as a result of injury prevention and injury management efforts.

Other Individual Level Factors

Other individual level factors identified in the current study include: benefits of rugby to the individual/participant identity, injury history, cognitive coping strategies and help-seeking behaviour. Past research has identified sport as an important part of athletes' self-identity, and athletic identity as a risk factor for poor mental health following injury (Brewer et al., 2013). Although some participants did identify sport as playing a central

role in their self-identity, this was seen as one of many roles rugby played in participants' lives. Other benefits rugby provided to participants included intrinsic happiness, structure within their schedule, positive social connections, and motivation for and means of improving physical fitness. These benefits of sport participation are well-supported by previous research (Wankel & Berger, 1990). Benefits of rugby participation may act as protective factors for athletes normally; however, following injury many of these benefits are taken away and may put the athlete at a greater risk of experiencing poor mental health. Although participants in the present study were not asked directly about the relationship, the *level* of rugby may have impacted reasons why athletes played the sport and what they gained from playing. As club athletes, participants benefitted from their participation in many ways. It is unclear whether these would be the same for varsity athletes or not, which is an important area for future research.

In the current study injury history was found to be both a risk and protective factor for different athletes. Some athletes identified frustration as a result of experiencing many previous injuries, confirming previous research which has identified a correlation between injury history and depressive symptoms (Appaneal et al., 2009). However, one participant also expressed that it was challenging to manage an injury without previous injury experiences. This is also supported by previous research, which found injured athletes with previous injury experiences to have higher self-efficacy than athletes who were not injured before (Wiese-Bjornstal et al., 1998).

Specifically, experiencing multiple previous concussions was found to potentially have a large negative impact on mental health. This was due to athletes worrying about the cumulative impacts of concussions and risk of permanent damage. Participants who

had experienced multiple concussions expressed fear towards the potentially long-term implications of their injuries. The long-term impacts of concussions and their cumulative effects have been well-documented (Thronton, Cox, Whitfield & Fouladi, 2008); however, fear associated with the long-term consequences of concussions may be a relatively new risk factor associated with the mental health of injured athletes. Participant interviews and previous literature both recognise the contributions of recent research and media coverage in making concussions a health promotion issue (Du Beaumont, Tremblay, Poirer, Lassonde & Theoret, 2012). Two participants in the present study chose to end their rugby participation in order to prevent further injury. Although this decision is a health (and risk) prevention strategy, participants were no longer able to benefit from rugby in many of the same ways they did as active players.

It was clear from the study's findings that how the athletes coped with their injury was also important for their mental health. Many participants identified using cognitive coping strategies including avoidance and positive thinking which, for the most part, were protective of mental health. Although avoidance is not typically seen as a positive coping strategy (Hasking et al., 2011), several participants identified it as useful to purposefully distract themselves from their injury. As expected, participants who were able to remain optimistic following their injury identified this as a protective factor in relation to mental health. This is congruent with previous literature, which identifies injuries as challenging to athletes' ability to be resilient (Brown et al., 2015).

Other coping strategies identified in the present study included help-seeking behaviours. Most participants did not exhibit formal help-seeking behaviours, which can be seen as a risk factor for poor mental health. Those participants who did seek

professional help identified it as helpful. Other participants expressed a lack of need or interest in professional mental health support. Potentially as a result, seeking help from informal sources was much more common. This is consistent with previous research which has found student-athletes have higher levels of stigma towards mental health issues (Kaier et al., 2015). Additionally, Martin (2005) found that athletes in contact sports were less likely to seek help from formal resources than athletes in non-contact sports. Stigma is addressed in more depth in relation to the societal level factors, but its impact on individual level behaviours is a significant risk factor for poorer mental health outcomes.

Finally, participation in rugby was seen by many participants of the present study to act as a coping strategy for other life stresses, including relationship issues and academic stress. While injured, many of the positive ways in which rugby benefits the athlete are taken away. Therefore, not only was the injury a risk factor for poor mental health itself; it also eliminated many protective factors the athletes gained from their sport participation. Although exercise and physical activity are recognised in the literature as effective coping strategies (Harris, Cronkite & Moos, 2006), sport participation specifically is rarely identified as a coping strategy, especially within injury-related research. In the present study, the more important rugby was to the individual athlete, the higher their risk of experiencing poor mental health while injured.

Interpersonal Relationships

The interpersonal interactions participants experienced were found to be either protective or risk factors. As expected there were interactions that participants had with people both within and outside of their team setting that acted as positive social supports.

Coaches, teammates and family members have all previously been identified as components of injured athlete support networks (Yang et al., 2010).

Within the present study, teammates were often identified as key social supports. This has several possible explanations. Primarily, participants thought teammates had a better understanding of the injury experience than those outside of the sport. Even teammates who have not experienced a similar injury may be better able to understand the injured athlete's experience and sympathize with them. Similarly, Bianco (2001) indicated that teammates are better able to provide informational support (such as shared injury experiences) than those not affiliated with sport. In the present study participants emphasized that, within the sport of rugby, they experience a high level of comradery with their teammates. Injured athletes identified teammates who they are very close with and that they would chose to seek social support from them.

Some participants identified parents as other key sources of social support, specifically related to their mental health. As parents and other social supports from outside of sport often have close relationships with the individual outside of the rugby environment, athletes may be more willing to use these interpersonal relationships to discuss emotional challenges. This supports Bianco's (2001) suggestion that teammates, coaches and those outside of the team are all important sources of social support for injured athletes. Specifically, Bianco (2001) identified family members as key sources of emotional support and those involved in sport including coaches and teammates, as key sources of tangible and informational support. In the current study each source of social support was found to contribute to injured athletes differently; however, overall social support was found to be a useful protective factor for most participants. This is

supportive of Green and Weinberg (2001), who found higher levels of social support satisfaction to be correlated with decreased mood disturbances for injured athletes.

Although participants expressed satisfaction with the social support they received, some participants also identified frustration with interactions they had with others while injured. Specifically, they were frustrated that their injury was often the topic of conversations they had while injured. This may have caused frustration because it became difficult for injured athletes to avoid their injury psychologically. Where other interpersonal interactions may have distracted the athlete from their negative circumstance, constantly discussing the injury prevents the athlete from using avoidance coping. Alternatively, when teammates and coaches asked participants about the state of their injury and expected return to play, this caused some participants to feel guilt associated with not playing. Although Yang et al. (2010) identify that dissatisfaction with social support puts injured athletes at a greater risk for mood disturbances, previous research has yet to identify persistent discussion of injury as a challenging aspect of the interpersonal interactions that athletes have while injured. This finding is important as it reveals problematic social interactions that may limit injured athletes' satisfaction with the social support they receive. Additionally, this suggests that social support, especially within the team environment, has the potential to be improved through educational intervention.

Team Environment

Factors within the team environment were found to have a less direct impact on injured athletes' mental health; however, they had a substantial impact on athlete attitudes and behaviours. From the descriptions provided by the injured athletes in the

current study, it appears that they felt pressure to behave in a similar fashion to other members of the team to which they belong. Conforming to one's social communities has previously been recognised as a common psychosocial behaviour (Chartrand & Bargh, 1999). As a result, the team environment has a large impact on the behaviours of athletes, including those experiencing injury.

Despite being club level athletes, many participants identified a strong bond between teammates, which generally contributes to good mental health. Comradery was built between teammates due to several factors including; significant time spent together, shared interests and working towards common goals. Additionally, participants felt that teammates are closer in rugby than in other sports because of the high amount of body contact and the importance of team cohesion within the sport. Although comradery between teammates on university teams has been previously described (Ellis, Williams, Kennedy, Ye & Pasupuleti, 2013), previous research has not compared levels of comradery based on sport type. For some injured athletes in the current study, comradery within the team had a large impact on the social support they perceived they had from teammates but also contributed to feelings of guilt when unable to play. In particular, players who identified a strong bond with their team expressed being frustrated by not being able to help their teammates in competition. As a result, player comradery has the potential to be either a risk or a protective factor for mental health.

Another shared team attitude that influenced individual athletes' mental health and their perceptions of their injuries was of the importance of toughness within the sport of rugby. Participants associated physical strength, independence, the ability to manage pain and perseverance with toughness. These concepts are closely aligned with how

previous literature has defined mental toughness (Coulter et al., 2010; Jones et al., 2002). Participants in the present study often expressed that toughness was a requirement for participation within rugby due to its high contact nature. Some participants identified pressure to exhibit toughness within the team setting. Related to injury, some participants felt that toughness within the team environment may have also impacted how they or other injured athletes managed their injuries. For example, participants identified that some athletes choose to avoid formal mental health resources out of fear of being perceived as weak. Some participants indicated that toughness acted as a barrier to help-seeking for themselves specifically. Any behaviours that may damage an individual's image of toughness were seen negatively by some athletes and were more likely to be avoided. This was consistent with past research that has found toughness to be seen as contradictory to help-seeking behaviour, especially by male athletes (Addis & Mahalik, 2003; Steinfeldt & Steinfeldt, 2012). When injured athletes do not use resources that may benefit them because of the culture of toughness within rugby, they are at a greater risk of experiencing poor mental health.

There were no gender differences identified in the ways the male and female athletes described 'toughness' in the current study. Past research has described a re-definition of femininity through rugby that allows women to be simultaneously tough and feminine (Ezzell, 2009). This is supported in the present study as female participants also described pressure to exhibit toughness. However, the present study expands on previous research which has not addressed how femininity within rugby impacts the injury experience for female players. Overall, female participants identified a desire to downplay injuries and continue to play when possible in order to be perceived as tough,

which is consistent with the previous discussion of its subsequent risks for poor mental health.

University Context

As all participants within the present study were student-athletes, their experiences of university-level mental health resources were all bound within the university context to which their club teams were affiliated. University mental health promotion strategies have the potential to benefit injured student-athletes by enabling them to take control over their own mental health or by advocating for them. Furthermore, resources from the University were expected to influence injured athletes in two additional ways. Primarily, injury management resources (Baugh et al., 2014) were expected to influence how the physical injuries of athletes were treated. Secondly, the University was expected to provide mental health resources (Eisenburg et al., 2007) that would benefit those athletes who utilized them. Within this theme, the use of coach interviews and the document review were especially prevalent and provided useful methodological triangulation.

The document review indicated that some information is provided to club teams in terms of injury management; however most of this was through athletic trainers rather than coaches or players. Unlike most National Collegiate Athletics Association (NCAA) coaches (Baugh et al., 2015), the coaches interviewed for the present study were not aware of any injury management policies at their university. It is hypothesized that this was, in part, due to the level of sport (as club rather than varsity). It was found that not only were varsity teams provided with more written information on injury management,

there were also more training and orientation opportunities for varsity athletes and coaches.

Additionally, while the documents reviewed did contain some information pertaining to mental health resources, this was only found in the Varsity Athlete Handbook which club level players and coaches would not have access to. Although multiple types of mental health services were available on campus, limited awareness and lack of perceived need were identified by some participants as barriers to accessibility. This has also been found in previous research (Eisenburg et al., 2007). While it is unclear how the University context impacted the injury experience for varsity athletes, it appears there is a need for all coaches (both varsity and club) to have access to resources and information related to student-athlete mental health, especially related to injury.

Previous research has identified prevention strategies with at-risk groups as a relevant best practice for Canadian universities (Jaworska, De Somma, Fonseka, Heck & MacQueen, 2016). Jaworska et al. (2016) identify providing these groups with social support, encouraging self-care and reducing stress as effective prevention approaches. However, these types of prevention efforts were not identified for injured student-athletes in the document review or interviews.

Factors at the Societal Level

At the societal level two key factors were identified that are both significant risk factors for poor mental health because of their impacts on athletes' perceptions and behaviours. Stigma was identified as one factor that impacted participants' attitudes and as a result, behaviours. Some participants identified that stigma towards mental health issues discouraged them from utilizing counselling services as well as from seeking

social support. This is consistent with past research (Kaier et al., 2015; Watson, 2006). Some participants also associated mental health issues and help-seeking with weakness. This also confirms previous research (DeLenardo & Lennox Terrien, 2014). As expected, stigma acted as a risk factor for many of the study's participants.

The other key factor found at the societal level is gender. Many of the male participants identified rugby as a masculine sport, as expected based on previous literature (Light, 2007). Masculinity impacts athlete behaviour by contributing to toughness within the sport environment. Additionally, participants associated masculinity with independence, especially related to coping strategies. This is confirming of previous research on masculinity and independence, including that of Smith et al. (2007), who found men hesitant to ask for support specifically for health-related issues. In the present study male athletes more explicitly identified a desire to manage mental health issues on their own than their female counterparts. This attitude limits both formal and informal help-seeking behaviours. As rugby was often associated with masculine traits by participants, male rugby players likely feel pressure to conform to masculine norms due to a belief that this will cause them to be perceived positively by teammates. As noted previously, this was a significant risk factor for poor mental health.

Similar to previous literature (Ezzell, 2009; Gill, 2007), female participants identified rugby as a source of empowerment, creating an image of toughness for female rugby players. In this way female rugby players were able to simultaneously be feminine and tough despite toughness being commonly associated with traditional masculinity. Female participants identified a desire to be perceived as tough by others which, for some athletes, impacted their willingness to disclose injuries. For both male and female injured

athletes, gender was found to have a less direct impact on mental health, impacting help-seeking and injury management. Although fulfilling gender expectations may be protective to one's self-image, impacts on injury management and help-seeking put injured athletes at a greater risk of experiencing poor mental health.

Key Intersections

The Socio-Ecological framework adopted for this study supports the idea of common interactions between levels of the model, and specific factors within them, that interact and influence the potential for factors to be risks for or protective of mental health. Within the present study, several of these interactions were identified and found to be potentially important influencers of the mental health of participants. As previous research has rarely included multiple factors that potentially impact injured athlete mental health, identification of these interactions is an important contribution to the existing literature.

An example of the multiple interactions that exist between factors across the different levels of the model that negatively impact injured athletes' mental health involves *playing time lost*. Playing time lost is an important individual level risk factor impacting mental health, with athletes who were unable to return to sport identifying this as particularly challenging. Even some athletes who were removed from sport participation for only a relatively short period of time identified experiencing depression or depressive symptoms as a result of a number of different factors. Specific factors that seemed to interact with playing time lost to aggravate poor mental health included: the benefits of rugby to the individual/participant identity, teammate interactions and comradery between teammates. Although injuries that impact athletic participation for a

long period of time may be challenging for any athlete, their negative impact on mental health is intensified when rugby plays an important role in the athlete's life (i.e., *athletic identity*). Therefore, playing time lost and benefits of rugby to the individual, were found to intensify each other as risk factors for poor mental health. Additionally, playing time lost was found to influence the *interpersonal relationships* of some injured athletes and their teammates. It was identified by participants that athletes often experience less frequent interactions with teammates when their injury causes them to miss longer periods of playing time, further impacting the frequency of social support injured athletes receive while injured. Although interpersonal interactions aren't always positive factors, the amount of playing time lost had the potential to mitigate teammate and coach support as protective factors. It was also identified that when injured participants were unable to play for a long period of time, the *comradery between teammates* that is normally developed through shared sport participation is not always experienced to the same extent.

Aspects of the team environment were also found to frequently interact with factors from other levels. For example, a *culture of toughness* presented at the team level was found to influence several individual attitudes and behaviours. Specifically, participants often identified *injury management* as being impacted. Participants recognised that rugby players often neglect injuries or return to play early, partly because of a desire to exhibit *toughness* [team environment]. Therefore, these aspects of the team environment may push injury management to be a risk factor rather than protective of injured athlete mental health. Additionally, toughness was found to influence injured athlete *social interactions* [interpersonal level], specifically with teammates. Despite

many participants identifying teammates as beneficial sources of social support, some athletes also identified a limitation of these relationships with regards to discussions on mental health. Although athletes may have close relationships with their teammates, many participants, especially males, felt that discussing mental health issues with teammates would be seen as uncomfortable and as a result this was not often done. These interpersonal interactions are likely influenced by aspects of the team culture.

Specifically, toughness within the team environment may limit discussions between teammates in relation to mental health. As a result, injured athletes may have had more profound interpersonal interactions about their mental health following their injury with supports outside of the team, including parents. This interaction between toughness and teammate support may have also been influenced by *gender*, a societal-level factor.

Other important interactions involve *stigma*. Although stigma is presented at the societal level, it interacts with factors at multiple other levels. Most directly, stigma limits *help-seeking behaviour* identified as an individual level factor. As help-seeking behaviour was found to be a protective factor, barriers to help-seeking, such as negative attitudes towards it as a result of stigma, were found to be risk factors. Several participants identified stigma as an obstacle to utilizing formal mental health resources; however, it was also found that stigma impacted informal help-seeking, such as discussing mental health with friends and teammates. In addition to limiting protective behaviours, stigma may have also contributed to participants psychologically ignoring mental health issues. In this way it may have also impacted cognitive coping strategies. Additionally, it is likely that there is a strong interaction between the risk factor of stigma presented at the societal level and *toughness* presented at the team environment. Stigma is

intensified within the team environment as a result of a collective attitude within sport valuing toughness. Rugby players' desire to be perceived as tough magnifies the impact of stigma on individual attitudes. Interestingly, it was found that some participants felt mental health issues and help-seeking are becoming increasingly less stigmatized. This may symbolize a culture change within the sport community involving more acceptance. The extent to which the University is proactive in promoting safe mental health and injury prevention practices may have a potentially important influence on facilitating this culture shift.

Implications for Mental Health Promotion Practice

Findings from the present study have identified multiple risk and protective factors influencing injured athlete mental health. Specific findings may also help inform mental health promotion strategies as well as treatment approaches following injuries. This section identifies stakeholders who are able to modify some of the risk or protective factors found in this study. Three sub-sections are presented here referring to specific stakeholders: university, coaches and teammates, and injured athletes. Each of these stakeholders can help protect the mental health of injured athletes by utilizing the specific implications and recommendations that are directed to them. As student-athletes exist within various systems and structures, the responsibility to promote mental health within this population is shared. When multiple stakeholders work together in mental health promotion initiatives, better health outcomes can be achieved because mental health is impacted by so many factors (Pollett, 2007).

University. As the university setting often already has sport and mental health resources in place, this is an area where the implementation of mental health promotion

strategies related to the present study is warranted. By collecting data from multiple sources it was found that resources provided from the University impacted injury management, however mental health related resources were somewhat disconnected. Specifically, participants felt there was nothing provided directly to them related to athlete mental health. Similarly, the document review in the present study revealed that there was limited mental health-related information included in documents directly targeted towards university club sport athletes. It is recommended that information related to the management of physical injuries, common student-athlete mental health issues (e.g., injuries, limited playing time, use of eligibility/graduation etc.) and campus mental health resources be included in varsity and club handbooks. Additionally, trainer handbooks may also be improved by recognising injuries as a mental health concern in sport, and by identifying mental health resources so that trainers may be gatekeepers when necessary. Finally, even a return to play protocol should recognise the importance of mental readiness within injury recovery. Both coaches and individual athletes should feel confident that the athlete is mentally prepared to return to play before sport participation is resumed.

Although the documents reviewed may benefit from the inclusion of more information on injury management and mental health, other forms of communication (e.g., presentations, workshops) may also be useful for ensuring knowledge translation. Specifically, increased personal engagement was identified through the interviews as a potential improvement to campus mental health services. For the most part, counselling services were seen by student-athletes who participated in this study as disconnected and unapproachable. One participant suggested that if teams were introduced to campus

mental health workers this would allow these services to feel more accessible to athletes and would increase help-seeking. Previous research has also recommended community outreach as a health promotion effort to improve help-seeking (Addis & Mahalik, 2003). Although improving perceptions of mental health services through increased personal engagement may be applicable to other groups other than student-athletes, sports teams offer a platform which may be easily used to introduce student-athletes to counselling services.

Through interviews it was also identified that campus mental health services may better meet the needs of student-athletes if counsellors had an athlete-focus. Participants felt that counsellors who had a background in sport may be able to provide better support to student-athletes as a result of specialization. Additionally, many participants expressed an increased *willingness* to utilize a sport-specific counsellor. This study confirms previous literature which has suggested that athletes may be more willing to use sport-related mental health services (Glick & Horsfall, 2009; Vaughn & Emener, 1994). There are several possible explanations for this. One is that athletes may see a sport-focused counsellor as more beneficial to them, and as a result may be more willing to seek-help. This confirms previous literature (Glick & Horsfall, 2009), which suggests athletes may experience mental health problems differently than other populations. Interestingly, Glick and Horsfall (2009) identified this as a rationale for sport psychiatry.

Additionally, as sport is often an influencing component of an athlete's identity, athletes may have a more positive attitude towards utilizing services that are sport-focused. Finally, the role of a sport-specific counsellor on a university campus may help student-athletes recognise that it is common for athletes to experience mental health

issues. Student-athletes may see help-seeking as an acceptable behaviour rather than as a sign of weakness. Participants in the present study, especially male athletes, identified the rugby context as a place where discussions about mental health rarely happen. Knowing that sport-specific counsellors are available may allow student-athletes to be more aware of their own mental health issues and more willing to seek help when needed. Glick and Horsfall (2009) suggested that athletes may be encouraged to seek help by integrating strategies to provide mental health care with sport performance-oriented support. Where possible, the implementation of an athletic counsellor is recommended. This is expected to improve help-seeking behaviour in student-athletes and to provide better mental health care for sport-related issues, such as injuries. Although costly, this would also improve wait-times for student-athletes as well as potentially non-athlete students by redirecting student-athletes away from more general counselling services.

Coaches and teammates. Coaches and teammates have previously been identified as important sources of social support for injured athletes (Bianco, 2001). Within the present study most participants expressed satisfaction with the social support they received from coaches and teammates. By encouraging injured athletes to maintain involvement with the team on and off the field, teammates and coaches can help prevent the injured athlete from feeling excluded or isolated.

Additionally teammates and coaches are seen as important gatekeepers who may refer student-athletes to formal mental health resources when necessary (Putukian, 2014). They may notice when an athlete is struggling managing their own mental health, and should encourage help-seeking behaviour when deemed necessary. It was found in the present study that some athletes felt uncomfortable discussing mental health issues and

may worry about being perceived poorly if they did. It is important for teammates and coaches to be supportive and create a safe environment.

Finally, some participants in the present study identified feeling frustrated that their social interactions regularly focused on their injury. Continually discussing the state of the injury and expected return to play may be challenging for athletes as it reminds them of their negative circumstance. It may be beneficial, especially for teammates, to be aware that some athletes may be frustrated with discussing their injury so often. Social interactions that distract the injured athlete from their injury may be more beneficial for some injured athletes' mental health.

Injured athletes. Although ideally injured athletes will be supported by different levels of their environment, they must also take on responsibility for protecting themselves from experiencing poor mental health. Initially following injury, athletes may benefit from reflecting on their own mental health state and potential mental health needs. Being well aware of one's mental health is difficult for some, especially for those in a sport environment where mental health is rarely discussed. Athletes will benefit from understanding the impacts of their injury on their mental health as well as what risk and protective factors are especially prevalent in their own lives. Without this self-reflection it will be difficult for injured athletes to consciously use coping strategies.

Some coping strategies that were found to be useful for participants in the present study were cognitive coping strategies which included positive thinking and goal-setting. Although these may be difficult to utilize while injured, they may act as protective mechanisms for injured athletes' mental health. Several participants identified physical activity, and specifically, rugby participation as a coping strategy that they normally use.

Although some injuries may prevent athletes from being physically active, this may be an effective coping strategy when possible. Pursuing new or modified activities may allow injured athletes to continue to be physically active while injured. As many of the participants in the present study identified rugby participation as an effective coping strategy when uninjured, finding a suitable replacement while injured is important. Another type of coping strategy that many participants identified as beneficial was help-seeking behaviour. Help-seeking may involve informal sources such as friends or family members, or it may involve using formal sources of support such as a psychologist or counsellor. Both formal and informal help-seeking behaviour can be protective factors for injured athlete mental health. However, some athletes do not desire to seek help or consider it to be helpful. As not all coping strategies will be beneficial for each injured athlete, it is important that each individual is able to identify and utilise coping strategies that are advantageous to them.

Strengths of the Study

One of the strengths of the present study was the diversity of injury experiences. Participants within the study experienced many different injuries, and a diverse range of playing time lost. Additionally, given the study was framed within a social ecological theoretical framework, many unique risk and protective factors for injured athlete mental health were identified. Previous research has often focused on one or few variables individually, whereas the interactions between factors were identified within the current study. In order to explore multiple levels of the model sufficiently, multiple methods including athlete and coach interviews and a document review were utilized. Collecting data from multiple sources is a research strength (Johnson & Onwuegbuzie, 2004) that

allowed each of the levels of the Socio-Ecological Model to be explored more adequately. Furthermore, this study explored mental health rather than mental illness and adopted a holistic perspective of health. Previous research has often focused on mental illness symptoms rather than mental health. The present study may contribute to mental illness prevention; however, because it primarily adopted a mental health promotion approach, it is applicable to a larger population, as everyone experiences mental health.

Furthermore, as the interviewer was also a member of the men's rugby team involved in the study, individuals who may have been otherwise unwilling to participate in qualitative research focused on mental health may have participated. Specifically, this allowed the study to have a good proportion of male participants which has often been challenging for previous research in this field. Male participants may also have been more willing to disclose information to someone they knew rather than a stranger (however, the opposite may also be true). Similarly, as someone who has had substantial experience with rugby and playing at the university club level, having a good understanding of rugby culture may have limited misinterpretation of results.

Limitations

Although it was felt that the sample was fairly representative of university club rugby players, certain participant characteristics such as race, ethnicity, sexual orientation and nationality, were not thoroughly explored by the present study. Additionally, only two coaches were interviewed. Coaches were only recruited from the same teams as players in order to represent the team and university levels as accurately as possible, however, this limited the number of coaches who were eligible to be participants.

A limitation of all interviews is that participants may have exaggerated or omitted information in order to be perceived positively. This may have impacted the validity of the study. Similarly, participants may have been unable to remember information that may be relevant to the researcher. Additionally, as the focus of the study was mental health-related, some participants may have felt uncomfortable with the topic. As a result, the answers to some interview questions may have been limited. However, effort was made to ensure that each participant felt comfortable and respected. Early interview questions were intentionally less invasive in order to help develop rapport with participants, and participants were told that their experiences were valuable to the study to encourage them to feel self-confident (Rubin & Rubin, 2012). Additionally, some participants may have had greater self-awareness of their mental health than others and may have been better able to identify factors influencing their mental health while injured. Furthermore, participants were not asked directly about substance use following injury, and as a result very few participants discussed this as a potential risk or protective factor. Including an interview question that directly addressed this topic may have been valuable.

In addition to coaches and athletes, athletic trainers may be an important stakeholder in the mental health-related injury experiences. Therefore it would have been beneficial to use interviews with trainers as an additional method of data collection. This would also help build connections between levels of the Socio-Ecological Model as athletic trainers are employees of the university, but work directly with teams and individual athletes in terms of injury management.

Additionally, the document review also had limitations. Specifically, as other forms of communication (presentations, orientations etc.) with athletes and coaches were not included, the review may not accurately identify all knowledge and resources that were provided to teams by the university. Additionally, how the included documents were practically used by coaches and athletes was not thoroughly explored. Moreover, the specific documents that were included in the document review were not asked about directly during interviews. Asking participants about the specific documents included would have identified how participants perceived the documents to impact their injury experience. Finally, the University context was fairly specific to the University which players attended. As documents and resources provided likely vary substantially between universities, this context may lack transferability. It is important to recognise limitations to the application of findings to other contexts in qualitative research (Drisko, 1997).

Implications for Future Research

A finding of the present study was that many participants identified rugby participation as a coping strategy itself. This was found to be a factor that contributed to poor mental health following injury that prevented sport participation and is an area that possibly warrants future research. As athletes' reliance on sport as a coping strategy may make them vulnerable to poor mental health following injury, the diversity of coping strategies used by athletes may be an important topic to explore.

Additionally, future research may benefit from the inclusion of athletic trainers. Trainers are likely a key stakeholder involved in injured athlete mental health promotion and management. Understanding their perspectives would be very useful and may provide insight into other potential risk or protective factors.

Although resiliency was a concept that was explored within the present study, its impact as a potential factor was unclear. The specific data relating to resiliency were often categorized within *cognitive coping strategies*, and as a result future research may be useful to more explicitly identify the impacts of resiliency on injured athlete mental health.

Additionally, it may be beneficial to further explore how mental health-related information may be provided to university student-athletes as a mental health promotion/prevention strategy. Exploring what information may be useful to student-athletes (e.g., common student-athlete mental health issues, coping strategies etc.), in addition to how this information may be best communicated to student-athletes (e.g., handbooks, presentations etc.) is likely important for practical applications.

Within the document review for the present study, only documents that were created or utilized by University administration were included. However, mental health promotion research may benefit by exploring documents and resources external to the University that may benefit injured athletes. Further research is needed to understand what other resources injured athletes may have access to, the extent to which these resources are utilized, and the impact that they can have on injured athlete mental health.

Additionally, the present study explored factors impacting university club athletes specifically. A similar study with varsity athletes would likely yield different results. Varsity athletes often have more sport-related responsibilities but also have access to more resources than club athletes. As a result varsity athletes may be more exposed to certain risk factors but may also have more access to protective resources and treatment options.

Furthermore, many of the factors related to team culture may have been sport-specific. The impact of sport type and characteristics of specific sports should be further investigated. As risk and protective factors may vary based on shared behaviours and attitudes, these aspects of sport warrant further exploration. Similarly, gender expectations may be different for athletes within other sports. As both male and female participants identified gender as having an impact on injury management within rugby, it may be useful to understand how gender is perceived to impact behaviour in other sports. Comparative studies may allow differences between sport types to be better understood in terms of their impact on injuries and mental health.

Conclusion

There are many factors that can influence the mental health of injured university rugby players. Each injury experience was found to be specific to the individual, and important factors varied based on the athlete and their unique experience. In this study, many of these factors have been presented using the conceptual framework of an adapted Socio-Ecological Model. Factors impacting injured athlete mental health were found in six themes: injury characteristics impacting mental health, other individual level factors, interpersonal relationships, the team environment, the university context, and factors at the societal level. Additionally, 'athlete mental health profiles' was identified as a seventh theme which also varied significantly between participants. This study expands on existing literature by exploring the interactions between several risk and protective factors that influence injured athlete mental health. The Socio-Ecological Model which has guided this study has allowed many environmental factors presented at the team and university levels to be explored. These levels have often been excluded from mental

health-related injury research. Additionally, the results of this study are relevant to mental health promotion strategies targeted towards student-athletes, specifically following injury.

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Appendix A: Recruitment Script

Hi, my name is Patrick Wright. Thank you for letting me talk to you all today. I am currently doing my Masters in Health Promotion at Dalhousie. As part of my program, I am conducting a study on the mental health of injured university rugby players. As you probably know, injuries are fairly common in rugby and for that reason it is important to do research on the experiences of injured athletes. One of the goals of my research is to help improve the management of injuries so that injured athletes may be less likely to experience poor mental health. Part of my research will involve interviewing players about their experiences and attitudes towards injuries. Interviews would last 1-2 hours and can be scheduled at your convenience.

So, to be eligible to participate in my study you have to be at least 18 years old and suffer an injury either this season or last season playing for your university team that prevented you from playing in games and practices for at least 1 week. If you were injured last year and are interested in participating in my study or would like to hear more about it you are invited to come and talk to me. If you unfortunately get injured at some point this season, I may be reaching out to you to ask you to participate in my study, however all participation is voluntary so none of you should feel pressured to participate if you do not wish to do so. Thanks and have a great season.

Appendix B: Recruitment E-mail

Dear (potential participant),

I am contacting you about potentially participating in my research study about the risk and protective factors that influence the mental health of injured university rugby players. You would be required to participate in a 1-2 hour interview (location TBD but will be on or close to Dal campus) answering questions related to the mental health related experiences of sport injuries and about the rugby environment. More information can be found on the attached consent form, however, this will not be signed until the interview, if you do participate. If you are interested, please complete the attached screening questionnaire and send that back to me. This is used to determine if you are eligible for the study. If you have any questions or concerns please contact me (613-894-4287, patrick.wright@dal.ca). Thanks,

Patrick

Appendix C: Screening Questionnaire

Demographic information

Name: _____ Gender: _____

Academic year: _____ University: _____

Total years played rugby: _____ Year on university team: _____

Position(s): _____

Injury information

Injury type: _____ (e.g., concussion, dislocated shoulder, ankle sprain)

Date the injury occurred: _____

Amount of time unable to play in games as a result: _____ (expected/on-going)

Cause of injury: _____

Appendix D: Consent Form

Project title: Exploring the Risk and Protective Factors Associated with Physical Athletic Injury that Influence the Mental Health of University Rugby Players

Lead researcher: Patrick Wright. Contact at 613-894-4287 or patrick.wright@dal.ca

Other researchers: Susan Hutchinson. Contact at 902-817-4702 or Susan.Hutchinson@dal.ca

Introduction:

You are invited to take part in a research study being conducted by me, Patrick Wright, student at Dalhousie University as part of my Masters of Arts degree in health promotion. Choosing whether or not to take part in this research is entirely your choice. There will be no impact on your studies or athletic participation if you decide not to participate in the research. The information below tells you about what is involved in the research, what you will be asked to do and about any benefit, risk, inconvenience or discomfort that you might experience.

You should discuss any questions you have about this study with Patrick Wright. Please ask as many questions as you like. If you have questions later, please contact the lead researcher.

Purpose and Outline of the Research Study:

The purpose of this study is to identify and explore risk and protective factors that influence the mental health of injured student-athletes. This research is intended to improve understanding of athletic injuries, and specifically the impact that they may have on mental health. A goal of this research is to inform strategies to prevent injuries from being damaging to mental health and to improve the management of injuries by informing policies and procedures.

This qualitative study involves interviewing 8-10 university rugby players who have experienced an injury since the beginning of the 2014 fall rugby season, interviewing 2-4 university rugby coaches and reviewing and analyzing documents related to injury management or mental health services associated with the university.

Who Can Take Part in the Research Study?

Players: You may participate in this study if you are currently or have previously been a rugby player for either Dalhousie University or University of King's College. Participants must have experienced an injury in either of the 2015 or 2016 university rugby seasons that prevented you from participating in rugby games for at least 1 week. All participants must be 18 years of age or older.

Coaches: Any current coaches of any of the Dalhousie University or University of King's College men's or women's rugby teams may participate in the research study.

What You Will Be Asked to Do:

You will be asked to participate in one 60-120 minute interview at or close to Dalhousie University. This interview will be audio-recorded.

Possible Benefits, Risks and Discomforts:

Participating in the study may not benefit you, but we will learn things that will benefit others. All participants will be given information about mental health resources after interviews have been completed.

Discussing mental health issues may make some participants feel uncomfortable. If you wish to stop participation at any point, you may do so. Although your name will be removed from any publications, your identity may become known based on the information given in interviews. This may be harmful to your relationships or your image. Up until two months following your interview you may withdraw your consent and the information you have given will not be used. After this point it may be difficult to withdraw information as data analysis will be underway.

Compensation / Reimbursement:

No compensation is offered for participation in this study.

How your information will be protected:

Privacy: Interviews will be conducted in a quiet room with only the participant and myself, Patrick Wright.

Anonymity: This research is not anonymous as your identity will be known to the researcher.

Confidentiality: Your name will be removed and you will be identified using a participant number. Interview recordings and transcribed scripts will be password protected on my computer. I will not discuss or identify your participation with anyone except my supervisor, Susan Hutchinson.

Limitations to confidentiality: Although names will be changed, other personal information such as gender, age, playing experience, injury characteristics and personal experiences may be used in future reports. This information may allow teammates, coaches or others to recognize you based on information presented in research reports.

Data retention: All data you provide will be kept private. I and my supervisor have an obligation to keep all research information private. Electronic records will be password protected and kept only while data remains useful. After the study is completed and the data you provide is no longer useful for the study, all data and records of participation will be destroyed.

If You Decide to Stop Participating:

You are free to leave the study at any time. If you decide to stop participating at any point in the study, you can also decide whether you want any of the information that you have

contributed up to that point to be removed or if you will allow us to use that information. You can also decide for up to two months if you want us to remove your data. After that time, it will become difficult for us to remove it because it may already be published.

How to Obtain Results:

If you would like to be sent final results they will be sent to you after data has been analyzed and the research completed.

Questions:

We are happy to talk with you about any questions or concerns you may have about your participation in this research study. Please contact Patrick Wright (at 613-894-4287 or patrick.wright@dal.ca) or Susan Hutchinson at 902-817-4702, Susan.Hutchinson@dal.ca] at any time with questions, comments, or concerns about the research study (if you are calling long distance, please call collect). We will also tell you if any new information comes up that could affect your decision to participate.

If you have any ethical concerns about your participation in this research, you may also contact Research Ethics, Dalhousie University at (902) 494-1462, or email: ethics@dal.ca (and reference REB file # 20XX-XXXX).”

Signature Page

Project Title: Exploring the Risk and Protective Factors Associated with Physical Athletic Injury that Influence the Mental Health of University Rugby Players

Lead Researcher: Patrick Wright, Dalhousie University (613-894-4287, patrick.wright@dal.ca)

I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I understand that I have been asked to take part in one interview that will occur at a location acceptable to me, and that those interviews will be recorded. I understand direct quotes of things I say may be used without the use of my name. I agree to take part in this study. My participation is voluntary and I understand that I am free to withdraw from the study at any time, until 2 months after my interview is completed. I agree that my interview may be audio-recorded. I agree that direct quotes from my interview may be used without identifying me by name.

Name

Signature

Date

I confirm I have completed the interview and agree that direct quotes without my name may be used in any publications by the researchers.

Signature

Date

I wish to be sent the final results from the study. Yes No

Appendix E: Athlete Interview Guide

Introduction:

Thanks very much for taking time to speak with me. As a reminder, I'm really interested in hearing about your experiences and opinions. So there are no right or wrong answers. If you have to think about a question before you give an answer that's ok. Also, as a reminder if you don't want to answer any of my questions you don't have to, and you may stop the interview at any point.

1. So I want to start off by talking about your involvement with rugby. Can you tell me about how you first started playing rugby and your experience with the sport?

Probes: What do you like about rugby? What don't you like about it?

2. Can you describe for me your sports-related injury history?
3. Now the injury that you had recently was _____, can you discuss that injury specifically, how it happened?
4. How severe do you think this injury was?
5. Can you tell me about the recovery process?
6. What impacts has the injury had on your life both within rugby and on other parts of your life?

Probes: Negative impacts? Any positive impacts? School, jobs, day-to-day activities?

7. Can you describe the different emotions you have been feeling since the injury, both immediately [when injured] and then as time has gone on?
8. For you, what do you think is the most challenging part of being injured?

9. So the type of injury you most recently had was [injury]. Compared to other injuries you've had are there ways in which this type of injury has had a different impact on your life?

10. Compared to other types of injuries do you think a _____, would be easier or more challenging to deal with in any way?

11. Can you talk about how injuries are thought about within rugby?

Probes: Is it just a part of the sport? Are they always taken seriously? Is that representative of your own team?

12. How do you think playing with injuries is thought about within rugby?

Probes: For example, if a player had an injury and decided to play through it what would teammates or coaches think about that player?

13. Can you give an example of an injury that you've had where you've decided to continue playing?

14. Do you think that playing through injuries has an impact on your mental health either in a negative or in a positive way?

15. How do rugby players normally perceive teammates who miss games because of injury?

16. At what point do you think it is acceptable to miss games or practices because of injury?

17. Did you ever feel any pressure to play with your injury?

Probes: Where did the pressure come from?

18. So this was your ____ year on the team, do you think that, that had an impact on the extent to which your injury affected your mental health?

Probes: Compared to if you were in your first/last year on the team?

19. Can you describe how you have tried to cope with your injury?

20. Common coping strategies include reaching out to others, talking about your experience with friends or teammates, exercising, alcohol or drug use, praying, eating more, and taking out anger in an aggressive or physical way. Have you used any of these to help you cope with your injury?

Probes: Were you satisfied with the coping strategies you used? Are there things you've done that you found really helpful for you? Were there things you've done that were actually not very helpful or harmful?

21. A term that is often associated with sports, and for us, rugby, is the term 'mental toughness.' In relation to rugby how would you define what mental toughness is?

Probes: What characteristics does someone who is mentally tough have?

22. How do you think mental toughness impacts the injury experience?

Probes: Minor injuries? Injuries that cause the player to miss time?

23. Another big concept in sport psychology is 'resiliency', which is defined as a personal characteristic associated with how an individual responds to experiences of adversity. It's often associated with having a positive reaction or a positive outlook towards a negative situation. Based on that definition, can you describe to

me how resilient of a person you see yourself to be? And how this has impacted—either positively or negatively—your injury experience?

24. Do you think players who are very passionate about rugby are impacted by injuries differently than players who are more involved in other areas of their lives?

Probes: In what ways? Why

25. What role do you feel rugby plays in your life?

Probes: How important is it to you?

26. Do you ever use rugby as a coping strategy to deal with stress or other mental health issues?

Probes: How? How helpful is it as a coping strategy for you?

27. Before and after your injury how would you describe your relationships with your teammates?

Probes: Have your interactions changed since being injured?

28. Did your relationships with your teammates impact your experience with your injury?

Probe: Do you feel like your teammates were supportive? Can you give any examples of interactions you have had with teammates relating to your injury that you were either happy with or disappointed with?

29. Following your injury, how would you describe your relationship with your coach?

Probes: Did it change from before you were injured? Do you have a sense of how concerned they are about your injury and in general physical and mental health?

30. Do you have an example of a specific interaction with your coach where you discussed your injury?

Probes: How do you think your coach wants you to manage injuries that you have?

Rest and fully recover? Return to playing as soon as you can?

31. Specifically, what type of support or interactions would you want from your teammates or coaches?

Probes: what could they have done to help you?

32. Overall, can you describe your relationships with people outside the team? Do you feel you could turn to them for support if needed?

33. After your injury did you reach out to them for support? Example?

34. How would you describe rugby culture?

35. How would you describe the culture of the Dal team?

Probes: What are the priorities of the team? What characteristics would you attribute to it?

36. So next I want to talk about how the mental health of injured athletes should be treated. Do you think rugby players are able to manage their injuries successfully on their own, or would they benefit from some kind of mental health support?

37. When injured athletes are having poor mental health what do you think would be the best way to help them cope with their injury?

38. What mental health resources do you know about on campus?

Probes: Counselling services? Help lines?

39. Have you used any of these resources to help you deal with your injuries?

Probes: Were they helpful? / Would you ever use them? – What type would you be most likely to use (in-person counselling, online supports, phone calls)? Why?

Probes: Would you ever consider using these types of services? Why/why not?

40. Do you know about any injury management policies or guidelines from Dal, Rugby NS or Rugby Canada?

41. Do you think that policies or guidelines from any of these organizations would have impacted your experience of being injured?

42. Do you have any suggestions of what types of policies or procedures could be in place to help guide coaches and injured players with regards to player safety?

43. Do you think that educating players and coaches about the impacts of injuries on mental health would be beneficial for injured athletes?

Probes: Is this something that players and coaches would be willing to do?

44. Mental illness and mental health problems are often talked about being stigmatized, meaning that they're often seen under a negative light and people often feel uncomfortable talking about them. How do you feel mental health is seen within your team?

45. Do you have any examples about when either you or a teammate has discussed mental health or any problems relating to mental health? Stress?

Probes: How was talking about mental health perceived by you/your teammate?

Probes: How do you think talking about your own mental health would be perceived by your teammates?

46. So the last topic that I want to ask you about relates to gender and how perceptions of masculinity [or femininity] influence the injury experience. How do you feel masculinity [or femininity] is perceived within rugby?

Probes: Is a rugby a sport that requires masculinity? Is masculinity [femininity] different in rugby compared to other sports or other contexts?

47. How is masculinity [femininity] perceived within the Dal team?

48. Does the way in which masculinity [or femininity] is perceived within your team impact how you or others have managed injuries?

49. Do you think injuries are thought about or managed differently on women's [or men's] teams?

50. Do you have any thoughts about other things that have either positively or negatively impacted your mental health following your injury?

51. Do you have any final opinions or stories relating to injuries and mental health that you'd like to share?

Ok, thank you for participating in the study.

Appendix F: Coach Interview Guide

Introduction:

Thank you again for participating in my study. As you know the goal of my research is to explore how injuries impact the mental health of rugby players. What matters to me is your own experiences and perceptions so there are no wrong answers. If you want to take some time to think about a question before you answer that's ok. And if you want to skip any questions you can.

1. To start off can you tell me about your history with rugby starting from how you first got involved?

Probes: How long have you played for? Still playing? What do you like about rugby as a sport? What don't you like about it? How long have you coached for? Can you talk about your history with the team you are coaching now?

2. What role do you see yourself in as the coach?

Probes: What are your responsibilities as coach? What do you like about coaching? What don't you like about coaching? What do you do well as a coach? Have you had any official training or qualifications as a coach?

3. As a player have you experienced any rugby injuries?

Probes: Severe injuries? Minor injuries? Have you had an injury that has resulted in you missing time from games? What was that like for you?

4. Do you think that all injuries impact mental health?

Probes: Is there a difference between injuries that prevent players from playing and injuries that athletes are able to play through, in terms of their impact on mental health?

Do injuries ever have a positive impact on mental health?

5. What impact a players' decision to either play through an injury or to not play?
6. What are often the impacts of deciding to play through injuries? Not play?
7. Do you have a story of when a player you've coached has played through an injury?

Probes: Do you think he/she should have played with it? What were your thoughts on the character of the player? How do think he was perceived by his teammates?

8. Do you think playing with the injury could have influenced his/her mental health in either a positive or a negative way?
9. Can you talk about what normally happens when players get injured and aren't able to practice or play in games?

Probes: Are they still connected with the team? Are they supposed to continue to attend practices and games?

10. When players that are normally starters on the team miss time for injury and then are able to return to play, how do you as the coach decide if they should have their spot back or not?
11. Have you seen any serious injuries that have had a big impact on a rugby player?

Probes: Do you have any stories or specific examples?

12. Do you think that the mental health of some athletes is affected more by injuries than others?

Probes: From your perspective, what contributes to these differences? What are the important personal characteristics that influence, either positively or negatively, the mental health of injured players? Are there things that certain players do while injured that positively impacts their mental health? Negatively?

13. How would you describe the culture of your team?

Probes: What characteristics do you attribute to it? What are the priorities for the team? How cohesive is the team?

14. Are there aspects of the team culture that may positively or negatively impact how injured players manage their injury?

15. Are there aspects of the team culture that positively or negatively impact injured athlete mental health?

16. How is rugby different from other sports at your university?

Probes: In what ways is rugby unique? Specific examples?

17. How do injuries affect the relationships within the team?

Probes: Are athletes treated differently when they're injured? By teammates? By coaches?

18. Can you talk about how injuries are thought about within rugby?

Probes: Are they just a part of the sport? Is that representative of your own team?

19. How do rugby players normally talk about injuries that cause other players to miss time?

Probes: Any judgement that they should be playing with the injury? Jokes that are made?

20. At what point is it acceptable to miss games or practices because of injury?

Probes: Do you as the coach have any negative attitudes about when players decide not to play because of injuries? Minor injuries? More severe injuries?

21. Can you talk about the relationship between the university and your team?

Probes: How well is the team supported? Athletic therapists/physiotherapy? Sports medicine treatment?

22. Can you describe any communication between you and the university about how injuries should be managed?

Probes: Are you aware of any policies or guidelines that the university has? What role do you think the university should play in managing injuries within your team?

23. Who should have the final say about if injured athletes should be able to play with their injury?

24. How is the team supported by the AUS, Rugby Nova Scotia and Rugby Canada?

Probes: In what ways? Are there policies from either institution that the team must follow? Injury management guidelines?

25. What mental health resources do you know about on campus?

Probes: Counselling services? Help lines? Online help? Do you think these types of formal resources would be beneficial to injured athletes?

26. How do you think injured players' attitudes are towards using these services?

Probes: What impacts these attitudes?

27. Do you have any suggestions for how to better help athletes deal with injuries?

28. Do you have any suggestions of what types of policies or procedures should be in place to guide coaches and individual players?

29. How could educating players and coaches about the impacts of injuries on mental health benefit injured athletes?

30. Mental illness and mental health problems are often talked about as being stigmatized meaning that they're often seen under a negative light and people often feel uncomfortable talking about them. How do you think mental health is seen within your team?

Probes: If a player talked about their own mental health, how would this be perceived by teammates?

31. How do you think an injured player having poor mental health because of an injury would be perceived by his/her teammates?

32. Whose responsibility do you think it is to look out for the mental health of university rugby players?

Probes: Individual? Coach? Teammates? University? Rugby NS?

33. So the last topic that I want to ask you about relates to gender and how perceptions of masculinity [or femininity] influence the injury experience. How do you feel masculinity [or femininity] is perceived within rugby?

Probes: Is a rugby a sport that requires masculinity? Is masculinity [femininity] different in rugby compared to other sports or other contexts?

34. How is masculinity [femininity] perceived within your team?

35. Does the way in which masculinity [or femininity] is perceived within your team impact how you or others have managed injuries?

36. Do you think injuries are thought about or managed differently on women's [or men's] teams?

37. Do you have any thoughts about other things that can positively or negatively impact the mental health of injured athletes?

38. Do you have any final opinions or stories relating to injuries and mental health that you'd like to share?

Thank you for participating.

Appendix G: Athletic Director Letter of Support

Project title: Exploring the Risk and Protective Factors Associated with Physical Athletic Injury that Influence the Mental Health of University Rugby Players

Lead researcher: Patrick Wright. Contact at 613-894-4287 or patrick.wright@dal.ca

Other researchers: Susan Hutchinson. Contact at 902-817-4702 or Susan.Hutchinson@dal.ca

Purpose and Outline of the Research Study:

The purpose of this study is to identify and explore risk and protective factors that influence the mental health of injured student-athletes. This research is intended to improve understanding of athletic injuries, and specifically the impact that they may have on mental health. A goal of this research is to inform strategies to prevent injuries from being damaging to mental health and to improve the management of injuries by informing policies and procedures. If coaches and athletes are more educated about injuries and their consequences on mental health, a more supportive environment can be created and athletes may be able to take more control over their own mental health.

This qualitative study involves interviewing 8-10 university rugby players who have experienced an injury within the past year, interviewing 2-4 university rugby coaches and reviewing and analyzing documents related to injury management or mental health services associated with the university. Each interview will last between 1-2 hours and will explore factors that influence the mental health of injured athletes by exploring personal experiences and attitudes.

Who Can Take Part in the Research Study:

Players: Players may participate in this study if they are currently, or have previously been a rugby player for either Dalhousie University or University of King's College. Participants must have experienced an injury within the past two years that prevented them from participating in rugby games for at least 1 week. All participants must be 18 years of age or older.

Coaches: Any current coaches of any of the Dalhousie University or University of King's College men's or women's rugby teams may participate in the research study.

Signature Page

Project Title: Exploring the Risk and Protective Factors Associated with Physical Athletic Injury that Influence the Mental Health of University Rugby Players

Lead Researcher: Patrick Wright, Dalhousie University (613-894-4287, patrick.wright@dal.ca)

I have read the explanation of this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction. I support this research being done with athletes and coaches associated with Dalhousie University and the University of King's College. I see value in this study being done and I believe it to be worthwhile for athletes and coaches to participate in.

Name

Signature

Date

Appendix H: Mental Health Resources Page

Thank you for participating in this study. If you have any questions please contact myself (Patrick Wright – 613-894-4287, patrick.wright@dal.ca) or my supervisor (Susan Hutchinson - 902-817-4702, Susan.Hutchinson@dal.ca). If you are someone you know is experiencing mental health problems we encourage you to seek help. Here are some potential resources you may use:

Dalhousie Personal Counselling (Free for Dalhousie University and University of King's College students) - 902-494-2081

Dalhousie Student Health Services - 902-494-2171

Emergency Phone Lines:

Mental Health Mobile Crisis Team – 902-429-8167

Dalhousie Security - 902-494-4109

Online support may be found at:

eMental Health - <http://www.ementalhealth.ca/>

Welltrack (Online self-help program) - <https://mywelltrack.com/CP/signup/form.html>

[/CP/signup/form.html](https://mywelltrack.com/CP/signup/form.html)