2021

Exploring Body Image Through the Injury and Rehabilitation Process of Female Intercollegiate Gymnasts: A Multi-Case Study

Morgan Miller
mill7140@mylaurier.ca

Exploring Body Image Through the Injury and Rehabilitation Process of Female Intercollegiate Gymnasts: A Multi-Case Study

By

Morgan Miller

B.A, specialization sport psychology, Laurentian University, 2019

THESIS

Submitted to the Faculty of Graduate Studies

Kinesiology and Physical Education

In partial fulfillment of the requirement for

Master of Kinesiology

Wilfrid Laurier University

Abstract

Injury is a known inherent risk when participating in any physical activity. In particular, gymnasts exhibit high overuse and traumatic injury rates, attributed to the nature and volume of their training. The resulting injury and rehabilitation process can present many challenges, which are unique to each individual. During this time, body image perceptions may change which could potentially lead to unique cognitive, emotional, and behavioural responses. The purpose of this multiple case study was to explore body image throughout the injured female gymnasts' rehabilitation experience and their return to intercollegiate sport. Participants included three National Collegiate Athletic Association (NCAA) Division 1 female gymnasts aged 18-23 who sustained a moderate to severe injury. Each participant completed three semi-structured interviews. Thematic data analysis produced three main themes: 1) Social Group Influences; 2) Heightened Body Image Awareness; and 3) College Gymnastics Culture. Knowledge gained from this study could be applied to the development of intervention strategies for body image disturbances in athletes, leading to a more comprehensive and individualized rehabilitation program.

Acknowledgments

First, I would like to thank my supervisor, Dr. Jill Tracey, for your patience and support throughout the past two years. I greatly appreciate your guidance and for always motivating me to expand my knowledge beyond my own research interests.

Second, I would like to thank my Thesis Advisory Committee, Dr. Jennifer Robertson-Wilson and Dr. Kimberley Gammage. Your extensive knowledge in the research process has been invaluable, and your input has taught me to think critically about my project. A special acknowledgment goes out to Dr. Roger Buehler from the Psychology department at Wilfrid Laurier University for taking on the role of external examiner.

Next, I must thank my family and friends who have been incredibly supportive during this time. I have faced challenges and setbacks in the past two years, and I am so grateful for all your encouraging words which motivated me to keep pushing forward. Furthermore, I would like to extend a special thank you to my sister who took the time to be an external editor.

Lastly, I would like to express my sincere and heartfelt appreciation for my participants, who took the time to share their personal experiences with me. This research project could not have been successful without you.

Table of Contents

Exploring Body Image Through the Injury and Rehabilitation Process of Female Intercollegiate Gymnasts: A Multiple Case Study

Chapter 1: Literature Review

Injury is a known inherent risk when participating in any type of physical activity, and even more so in competitive sport, which may be due to the high intensity and volume of training. Athletes involved in certain sports, such as gymnastics, can be more susceptible to injuries than athletes in other sports and may exhibit a higher injury rate because of the difficulty of skills being performed. Overuse and traumatic injury rates in gymnastics are among the highest of any sport (Kerr et al., 2015) with injury rates varying from 1.3 to 9.22 per 1000 exposure hours (Hootman et al., 2007; Kerr et al., 2015; O'Kane et al., 2011). The injury and rehabilitation process (IRP) can be a challenging time for athletes, and the response to injury is unique to each individual. This is due to the personal (e.g., demographics, personality, athletic identity, self-perceptions) and situational (e.g., sport type, level of sport, social influences, rehabilitation environment) variables that influence athlete's cognitive, emotional, and behavioural response. Changes in body image may occur as a result of a sport-related injury and could potentially influence those cognitive, emotional and behavioural response. However, there is limited research on body image throughout the IRP within the literature to date.

Body image can be defined as "...the multifaceted psychological experience of embodiment, especially but not exclusively one's physical appearance" (Cash, 2004, p.1), as it is considered a multi-dimensional construct. Therefore, along with physical appearance, body image also encompasses body-related self-perceptions and attitudes related to health, fitness, and physical functioning, which include thoughts, feelings, beliefs and behaviours (Bailey et al., 2017). Furthermore, the embodiment experience is conceptualized as complex and includes body

functionality and other aspects of positive body image (Cash & Pruzinskey, 2002). Body image has been well-studied in athletes and is particularly relevant in gymnasts. This may be due to the significant physical and mental demands that the sport of gymnastics imposes on the athlete. A high performing gymnast is under substantial pressure to achieve perfection in their performance and appearance. Attaining this ideal may be more difficult if an athlete experiences an injury and is unable to participate in their sport for a period of time. This could potentially alter their mental state and impact their recovery (Shapiro et al., 2017; Wiese-Bjornstal et al., 1998).

Body image changes in injured athletes, more specifically those with musculoskeletal injuries, has been profoundly underrepresented in the literature. While there are studies investigating body image changes as a result of injury in the general population, the majority do not include injured athletes who return to sport after the injury is healed, even though this is a relevant topic (Moin et al., 2009; Taleporos & McCabe, 2002). Thus, it is important to better understand the psychological response to injury in athletes, which includes body image, as these factors play a major role in their physical and psychosocial recovery (Shapiro et al., 2017). Knowledge gained from this focus of study can possibly be applied to the development of intervention strategies for improving body image, leading to a more comprehensive and individualized rehabilitation program.

The following review of the literature begins with an introduction exploring the unique population of student-athletes as well as the various ways to categorize sports. The sport of gymnastics is highlighted because it provides context to the present study and because it is important to understand the significant pressures associated with being a gymnast. Following the general overview of sport, an introduction to injury in sport and the various responses athletes may experience following a sport injury are discussed. This leads into the exploration of body

image research and the relationship it has with injury. Lastly, the purpose and research questions are noted.

1.1 Intercollegiate Sport

For many young athletes, being part of a college or university sports team is the ultimate goal for their athletic career. Intercollegiate athletes are a unique student population, as they have a built-in community and social support system, as well as the opportunity to develop life skills and build character (Chen et al., 2010). Conversely, student-athletes may be exposed to additional physical and mental stressors that the general student population does not encounter (Kroshus, n.d.). A student-athlete will face balancing academic and athletic performance (encompassing individualized and team training, strength and conditioning, rehabilitation) which may lead to depression, burnout, a lack of social life, substance abuse, and disordered eating (Chen et al., 2010).

In general, there are various ways to categorize each sport based on characteristics that may influence the types of pressures an athlete will experience (Reel & Voelker, 2012). For example, an aesthetic sport is one where an individual's physique is a major component of the outcome, and it places an emphasis on perfection in performance and appearance. The success of an athlete in this type of sport does not simply depend on the execution of physical skills, but their presentation of those skills as well (Reel & Voelker, 2012). Sports such as figure skating, swimming, dance and gymnastics fall into this category. For example, performance success in gymnastics is based on choreography, body placement and clean lines (e.g., pointed toes, straight legs, feet together), in addition to the technical elements, such as difficulty of jumps, flips and turns. Preferred body shapes may differ among aesthetic sports in order to achieve the desired look the judges and spectators expect to see (Reel & Voelker, 2012). For example, being lean

and low in weight are favoured in gymnastics, diving, dance and figure skating, whereas being muscular and having a symmetrical skeletal structure are of importance in body building (Reel & Voelker, 2012). Davison and colleagues (2002) found that aesthetic-sport participants as young as five to seven years old reported more weight concerns than those who took part in non-aesthetic sports. Furthermore, female athletes involved in aesthetic sports may be especially prone to body image disturbances (Casanova, 2019; Rice et al., 2016). In comparison, athletes involved in team sports such as hockey, soccer, lacrosse and basketball are not conventionally considered at high risk for body image concerns (Sundgot-Borgen, 1994) which could be due to the absence of the additional appearance-oriented pressure and the judging component. However, body image disturbances may occur in any athlete and these issues are not restricted to individuals involved in aesthetic sports.

Gymnastics is considered to be an aesthetic sport, where leanness is encouraged and the judging element puts additional pressure on the gymnast for a flawless performance (Frogley et al., 2018). Artistic gymnastics consists of four events, which include vault, bars, beam and floor, with each event requiring a different skill set. Intercollegiate gymnastics is both an individual and team sport, where one competes to achieve their personal best score, along with working towards a high team score so as not to disappoint their teammates and coaches (Hopkins, 2014). This pressure to attain the highest score possible leads to the drive for perfection, in both training and competition (Nippert, 2005). Gymnastics is one of the few sports where the athlete will have the highest possible start value based on the difficulty of skills in their routine, and as the gymnast performs, they will lose points based on their mistakes and slight imperfections (Nippert, 2005).

Gymnastics is a demanding sport with long and rigorous training hours. Competitive gymnasts can start training as young as five years old and can quickly work their way up to spending approximately 36 hours a week in the gym (Daly et al., 2001; Kolt & Kirkby,1999; Lindner & Caine, 1990). This is necessary if a gymnast wants to succeed as an elite athlete, as they have a limited number of years to obtain the skills needed to reach that level since gymnasts have such a short lifespan compared to other sports (Nippert, 2005). This contributes to the physical and mental demands which gymnastics entails. As the gymnast progresses to higher levels, the physical skills get more difficult, such as release moves on the bars and more complicated tumbling passes on the floor, which exposes the body to a large amount of force and can make these athletes more susceptible to injury (Chase et al., 2005; Sweeney et al., 2018). According to Sweeney et al. (2018), artistic gymnastics has the second highest injury rate in collegiate sports, following spring football. The rehabilitation process for gymnasts, more specifically intercollegiate gymnasts is complicated by the pressure to return back to practice swiftly after an injury because the team needs them in the line-up in order to achieve the highest score. This return back to sport frequently happens before they are physically and mentally prepared to (Sweeney et al., 2018). Additionally, as part of the gymnastics culture, it is common for athletes to train and compete even when they are in pain or injured (Nippert, 2005; Sweeney et al., 2018).

1.2 Injury in Sport

When participating in sport or any type of physical activity, there is always an inherent risk of injury (Tracey, 2003). Within the sport and performance environment, injuries can generally be defined as, “trauma to the body or its parts that result in at least temporary, but sometimes permanent physical disability and inhibition of motor function” (Berger et al., 2007, p.186). An

injury can add significant stress to an athlete and create additional challenges (Putukian, 2015). For example, an injury can lead to depression, isolation, frustration, changes in appetite, sleep disturbance, disengagement, reduced self-esteem and more negative body image (American College of Sports Medicine, 2006; May & Sieb, 1987). In particular, injured athletes may undergo undesirable physical changes, such as weight gain or a decrease in muscle mass, which may become more profound the longer they are away from their sport (Boidy, 2018; Myer et al., 2014). As well, there will be anxiety surrounding their ability to perform the pre-injury acquired skills. Overall, each individual athlete will have a different emotional and behavioural response to injury, leading to a distinct path of recovery (Shapiro et al., 2017).

1.2.1 Response to Injury

The injury experience has both physical and psychological components, and the response to the IRP is unique to each individual. The integrated model of response to the sport IRP (Wiese-Bjornstal et al., 1998) takes into account an athlete's personal (e.g., injury type and severity, psychological well-being, demographic, physical health status) and situational (e.g., type of sport, social influences and support, rehabilitation environment) factors that may influence their cognitive, emotional and behavioural response to injury, which play a key role in both the physical and psychological recovery outcomes (Shapiro et al., 2017). More specifically, this model includes various personal psychological factors, such as self-perceptions, self-motivation and athletic identity. For the purpose of this study, the focus will be on self-perceptions, as it may be related to an individual's body image.

Overall, the recovery process from a sport-related injury is dynamic and can progress in various ways depending on the individual's state of mind. Traditionally, the physiologic phases of rehabilitation, which are the acute injury phase, repair phase and remodeling phase, guided

therapy for an injury (Clement et al., 2015; Prentice, 2011). However, this approach does not take into consideration an athlete's psychosocial reaction to their injury (Clement et al., 2015). Thus, Kamphoff et al. (2013) suggested an approach that integrated these components, and renamed the phases: reaction to injury, reaction to rehabilitation, and reaction to return to sport. The purpose of this incorporation is to allow for the individualization of treatment based on each athlete's psychosocial challenges, which may include body image disturbances, and provide comprehensive care.

The approach of Kamphoff et al. (2013) allows for the consideration of an athlete's psychological response to injury, which is constantly evolving throughout the rehabilitation process. The psychological aspect is important to understand because it influences recovery outcomes (Shapiro et al., 2017; Wiese-Bjornstal et al., 1998), and so it should be addressed in the treatment plan. To accomplish this, one needs to know what the predominant psychological responses are in each phase. A study conducted by Clement et al. (2015) documented injured athlete's psychosocial responses during the different phases of injury rehabilitation from eight NCAA Division II athletes that were both male and female and engaged in a variety of sports (i.e., football, baseball, acrobatics and tumbling). This study found that during the reaction to injury phase, an athlete's cognitive appraisal of the injury is affected by how severe they perceive the injury to be, and this appraisal primarily involved negative thoughts, leading to negative emotional responses. Similarly, Johnston and Carroll (1998) suggested that in the early stages of the injury process, athletes showed feelings of frustration and depression due to their abrupt lack of involvement in sport. This influences the behavioural response of an athlete. Furthermore, Clement et al. (2015) found that the prominent initial behavioural response was to seek social support from a variety of people, including family members, friends, teammates and

coaches, which is a positive reaction to the circumstances. In contrast, a sport injury may precipitate maladaptive behaviours, such as disordered eating (Sundgot-Borgen, 1994), the consumption of alcohol (Martens et al., 2006) and other banned substances (National Collegiate Athletic Association, 2012).

As rehabilitation begins, the initial impact of the injury subsides and the athlete's focus will be to increase strength, balance, and mobility through physical therapy exercises (Kamphoff et al., 2013). According to the study conducted by Clement et al. (2015), the injured athlete will question the rehabilitation process, including the program's perceived value and difficulty, as well as their willingness to participate. These thoughts will affect the athlete's emotional response, which at this stage, commonly includes feelings of frustration (Clement et al., 2015). Additionally, various studies found as the athlete progresses through rehabilitation, there is a shift toward more positive emotions (Carson & Polman, 2008; Stoltenburg et al., 2011; Thatcher et al., 2007) with potential feelings of depression and frustration associated with setbacks (Bianco et al., 1999; Carson & Polman, 2008; Johnston & Carroll, 1998). These emotional shifts are important to consider as they may reflect potential changes in body image perceptions throughout the rehabilitation process. As well, in terms of behavioural response, Clement et al., (2015) found that athletes will demonstrate cautiousness and continue to seek social support but will increasingly rely on the assistance of sports medicine professionals.

As the athlete approaches their return to sport, there may be both positive and negative thoughts, with a major theme of reflecting on the IRP and what they have learned from it (Clement et al., 2015). During this time, Clement et al. (2015) found that an athlete may display cautiousness when resuming their training as a result of re-injury anxiety during this phase, as

well as feelings of excitement. Additionally, Quinn and Fallon (1999) found that the athlete's sport self-confidence declined during rehabilitation and increased as they recovered from injury.

In conclusion, the integrated model of response to the sport IRP is a theoretical framework which helps to understand the psychological response of an injured athlete. It can explain why two athletes with a similar injury and prognosis can have two distinct psychological responses, leading to different recovery outcomes, based on a variety of personal and situational factors (Clement et al., 2015). This model includes the concept of self-perception as a personal factor, and it is involved in the athlete's cognitive appraisal following an injury. While this model does not specifically include body image, self-perception relates to the idea of body image, as distorted self-perception can result in body image disorders (Cash, 2012). Body image is an area that has limited research in respect to the IRP.

1.3 Body Image

According to Cash (2004, p. 1), body image can be defined as "...the multifaceted psychological experience of embodiment, especially but not exclusively one's physical appearance." The concept of body image quickly developed starting in the early 1900's (Sabiston & Brunet, 2021). This phenomenon became a prevalent research topic in Westernized cultures, and therefore, the scope of this idea grew in various ways. Researchers have primarily focused on the negative aspects of body image, such as body dissatisfaction, body image disturbances, and body dysphoria (Soulliard et al., 2018). However, researchers have discovered that there are healthy aspects to body image, such as love, respect, acceptance and appreciation of one's body despite how societal ideals can lead to comparing and criticizing of one's body (Tylka & Wood-Barcalow, 2015). More specifically, the concept of body functionality is important to recognise as it can help achieve a more well- rounded understanding of body image. Body functionality

entails everything that the body can do. This includes functions related to physical capacities such as walking, internal process such as digestion, senses and sensations, creating endeavours such as singing, communication via body language and self-care practices such as sleeping (Alleva et al., 2015). Alleva and colleagues (2014, 2015) suggested that by focusing on body functionality and everything the body is capable of doing, may offset the negative thoughts towards one's body appearance and therefore, potentially promote a healthier body image by reducing anxiety and depression.

Due to its dynamic nature, one's perception of their body image will change over time (Orth et al., 2010), and every individual will perceive their body differently across situations. For example, after sustaining an injury and as they progress through the rehabilitation process, an athlete may experience physical changes, which can affect how they perceive themselves. Furthermore, studies have shown an individual's perception of their body may change depending on the situation. For example, athletes often experience different levels of body satisfaction depending on their surroundings, such as being around friends and family or being in the sporting environment (De Bruin et al., 2007; De Bruin et al., 2011; Russel, 2004). More specifically, there are different body ideals that exist such as the athletic body image which can be defined as "the internal image one has of his or her body and the evaluation of that image within an athletic context" (Greenleaf, 2002, p. 64) and the social body image which refers to body evaluation in the context of daily life (De Bruin et al., 2011). According to De Bruin et al. (2011), women athletes in endurance and aesthetic sports (i.e., gymnastics) appeared to have a more negative athletic body image than daily life body image. Athletes may have high body satisfaction in their social life due to the fact that their lean body meets cultural standards, whereas they may be more critical of their physique when comparing themselves to others in the

athletic community because of sport-specific pressures (De Bruin et al., 2007). In contrast, Russel (2004) found body satisfaction among women rugby players, cricketers and netballers decreased when placed in a social environment due to the perceived demand to conform to socially accepted norms of physical attractiveness which is different than the athletic context ideal. It is important to be aware how the gymnastics body ideal may differ from the thin ideal that dominates western society. For example, De Bruin et al. (2007) found that rather than gymnasts believing that thin is beautiful which is what society expresses, they were convinced that thin is going to win. Therefore, in order to better understand the concept of body image, it is important to identify and discuss the four dimensions (perceptual, affective, cognitive, and behavioural) which influence body image.

1.3.1 Dimensions of Body Image

The perceptual dimension of body image is the accuracy with which someone sees themselves (Sabiston & Brunet, 2021). It is considered to be the mental representation that one has of their own body appearance and function, although it may not reflect how others see you. For example, those who tend to overestimate their body size perceive a slight imperfection in their appearance and will believe that it makes them unattractive and deformed (Cash, 2012). As aesthetic sports are appearance-oriented, how one perceives themselves may impact their sport performance through changes in their thoughts, feelings, and behaviours as a result of these beliefs. For instance, a female gymnast may see themself as overweight, and will consequently reduce their calorie intake, which may lead to low energy and poor performance.

The affective dimension of body image is the way one feels about themselves (Sabiston & Brunet, 2021). It includes the body-related feelings and emotions associated with thinking about one’s body size, shape and function (Sabiston & Brunet, 2021). Social physique anxiety

(SPA) is an example of a body-related feeling and can be described as the experience of being worried about how other people may be viewing or judging one's physique (Hart et al., 1989). According to previous research, findings suggest that exercisers report having lower SPA compared to non-exercisers (Mack et al., 2008; Nugent, 2020). Conversely, those individuals who participate in activities where their body is a main focus, such as in athletes, are more likely to have an increase in SPA (Sabiston et al., 2014). More specifically, athletes in aesthetic sports may report higher SPA compared to athletes in non-aesthetic sports (Sabiston et al., 2014).

Other body-related feelings associated with this dimension include body-related shame, guilt, pride, embarrassment, and envy (Sabiston & Brunet, 2021). Shame has been defined as “a negative feeling elicited from a perceived or feared failure to meet the societal standard of physical appearance” (Pila et al., 2016 p. 100). On the positive side of body image, the emotion of pride reflects body appreciation and acceptance of its function, health and social representations (Castonguay et al., 2013; Sabiston et al., 2010). Pride can be experienced differently based on a person’s age and sex but has been associated with the development of positive self-esteem and intrinsic motivation to engage in goal-directed tasks and behaviours (Castonguay et al., 2013; Orth et al., 2010; Sabiston et al., 2010; Sabiston et al., 2019). Moreover, other sources of body appreciation include the ability to demonstrate strength, power and flexibility, as well as the ability to learn new movements and perform everyday skills effectively (Menzel & Levine, 2011).

The cognitive dimension of body image is the thoughts, beliefs and evaluations you have about your body (Sabiston & Brunet, 2021). For example, the level of satisfaction or dissatisfaction in regard to shape, size, weight, and function. This dimension is considered one of the most common to research and practice (Sabiston & Brunet, 2021). There have been

inconsistent findings in this research area, where past research show that athletes have higher body satisfaction compared to non-athletes (Hausenblas & Down, 2001). The authors attributed this conclusion to the fact that athletes have higher physical activity levels and may more closely resemble the aesthetic ideal that individuals are striving for to a greater degree than the average and recreational exerciser. Whereas other and more recent studies find that athletes may have lower body satisfaction. This could be due to the level of the athlete, sport type and, outstanding pressures to look a certain way because their bodies are always on display (Hausenblas & Down, 2001; Sabiston et al., 2014; Varnes et al., 2013).

The behavioural dimension of body image is the decision to take action in regard to their body shape, size, weight or function based on their feelings, thoughts and perceptions (Sabiston & Brunet, 2012). These behavioural responses can include body checking (weight monitoring, pinching oneself as measure of fatness), wearing certain clothing, dieting, engaging in physical activity, taking supplements and receiving cosmetic surgery. In terms of aesthetic sports, many studies suggest a strong relationship between disordered eating behaviours and sports that emphasize the importance of leanness (Dick, 1991; Krentz & Warschburger, 2011; Patel et al., 2003; Smolak et al., 2000; Stoutjesdyk & Jevne, 1993; Sundgot-Borgen, 1994; Thompson et al., 1999).

These dimensions overlap in many ways. Research suggests a correlation between SPA (affective dimension) and body dissatisfaction (cognitive dimension). A study of female undergraduate students found that those who reported high body dissatisfaction also had high levels of SPA (Ataly & Gencoz, 2008). Other outcomes that have been linked to SPA are disordered eating, depression, and low self-efficacy (Marquez & McAuley, 2001; Sabiston et al., 2014). Additionally, according to a study by Jankauskiene and Pajaujiene (2012), those who

reported high body shame (affective dimension) also reported higher body dissatisfaction, higher levels of disordered eating (behavioural dimension) and low self-esteem, regardless of their physical activity levels. Moreover, Menzel and Levine (2011) mention that people who report high levels of appreciation for their bodies (affective), tend to participate in fewer unhealthy weight control practices such as binge eating, as well as show increased levels of physical activities (behavioural).

1.3.2 Body Image and Injury

There is an abundance of research on the integrated model of psychological response to sport injury, as well as on body image in general. Moreover, there are several studies that have examined body image in individuals who have suffered from diseases and non-sport related injuries. One such study was conducted by Fobair et al. (2006) which determined the frequency of body image and sexual problems in the first months after treatment among women diagnosed with breast cancer. One of the findings showed that greater body image problems were associated with hair loss from chemotherapy, concern with weight fluctuations, poorer mental health and lower self-esteem (Fobair et al., 2006). Furthermore, Moin et al. (2009) examined the association between sexual identity, body image and life satisfaction among women with and without physical disability, resulting from spinal cord injury or as a complication of polio. It was found that the women with physical disability had significantly lower body image and life satisfaction compared to those without (Moin et al., 2009). Moreover, the presence of a physical disability affected the young adult women (21-30 years old) more than the middle-aged women (31-45 years old), in terms of their body image and life satisfaction (Moin et al., 2009). As the present study will be based on the experiences of an intercollegiate gymnast, it is important to remember that age may influence the findings.

A study conducted by Taleporos and McCabe (2002) also examined individuals with physical disability, including spinal cord injury, and found their disability negatively affected their psychological experiences, feelings, and attitudes toward their bodies. However, a theme of adjustment and bodily acceptance over time emerged in three of seven participants, through supportive feedback from significant others and focusing on the positive attributes of one's body (Taleporos & McCabe, 2002). Furthermore, there are studies within this area of literature that include other types of injuries. For example, Iles et al. (2017) explored body image changes in women after anal sphincter injury sustained during childbirth. In this study, 53% reported a perceived change in body image following this injury, and a perceived change in anatomy due to the delivery increased the likelihood of body image changes in these women (Iles et al., 2017). Although this is not a sport-related injury, it may predict that an injury resulting in anatomical changes may be a factor in body image changes among athletes.

To our knowledge, to date, there is only one study examining body image in athletes after a sport-related injury (Chaouch, 2013). One purpose of this study was to "examine the relationship between perceived body image and injury from a longitudinal perspective" (Chaouch, 2013, p. 4). The athletes participated in various types of sport (tennis, wrestling, basketball, golf, football, cross country, softball, swimming/diving, football, soccer) and were classified injured if they had limited participation in sport for a minimum of seven days. Data collection occurred at three time points (before injury, midpoint of rehabilitation process, late April) where they were asked to answer the Social Physique Anxiety Scale (Hart et al., 1989). Although this study found no significant results, trends suggested there was a negative shift in an athlete's perceived body image after an injury, but as they progressed through the rehabilitation process, their body image perceptions began to more closely resemble their pre-injury state

(Chaouch, 2013). It is suggested that there be further investigation into these trends (Chaouch, 2013).

After reviewing relevant studies, it is apparent that there is a connection between injury and body image changes in the general population. Yet, there is a lack of literature on body image and its relationship to the IRP within the athletic population. Research is warranted in this area as injury and body image perceptions are both prevalent topics in athletes.

1.3.3 Body Image and Injury in Gymnasts

Being an athlete, setting high performance and physical standards for oneself comes with the nature of sport (Koivula et al., 2002). In addition to the external pressures from coaches, teammates and judges, there are the pressures the athlete puts on themselves to become more competitive and meet sport-related physique ideals (Reel et al., 2013). More specifically, as gymnastics is an aesthetic sport, the athlete's body is under constant judgement and surveillance and is measured against its performance (Frogley, et al., 2018). According to Nadia Comaneci (2012), "perhaps more than any other sport, gymnastics demands perfection" (as cited in Frogley et al., 2018, p. 235) and thus, it would be reasonable to expect gymnasts to place significant pressure on themselves to be perfect in both appearance and performance. The risk of perfectionism is high in gymnasts, and it could potentially be detrimental and lead to body image disturbances (Vartanian, 2012). Those who have perfectionistic tendencies may exhibit a variety of psychological and physical concerns (Hewitt et al., 1995), which include eating disorders, depression, decrease in self-esteem and a variety of different anxiety disorders (Flett et al., 1989; Haase et al., 2002; Koivula et al.,2002; Pacht, 1984).

It has been well-documented that injury is a frequent occurrence in the sport of gymnastics. A collegiate gymnast must undergo training that is both high in intensity and volume

in order to achieve the sport's ideal appearance and performance (Chase et al., 2005), which stems from the desire to be perfect. Research has shown that perfectionistic athletes are at an increased risk of reporting more injuries over time than those who are not high in perfectionistic tendencies (Krasnow et al., 1999; Madigan et al., 2017; Nippert, 2005). Furthermore, the training required of an elite gymnast, along with the difficulty of skills being performed, creates many opportunities for injury (Chase et al., 2005).

In conclusion, gymnastics is a sport where body image disturbances and injuries are common phenomena and have been extensively studied as two separate entities. However, the connection between potential body image changes to the IRP in an athlete has been relatively unstudied. Research is warranted in exploring body image among gymnasts who sustain an injury.

1.4 Purpose

This case study aimed to investigate potential changes in an athlete's perception of body image throughout a sport-related injury and the rehabilitation process. A case study design was chosen to gather large amounts of comprehensive and thorough information (Stake, 2000) to explore body image throughout injured female gymnasts' rehabilitation experience and their return to intercollegiate sport. The athletes' background and pre-injury insights of body image were discussed retrospectively, as well as their body image perceptions during the response to injury, rehabilitation and return to sport phases. By exploring the four dimensions of body image (perceptual, affective, cognitive and behavioural) throughout this process, the study aimed to provide an in-depth view of potential body image changes resulting from a major sport injury and through the rehabilitation process to the return to sport.

1.5 Research Questions

In order to explore the intercollegiate female gymnasts' experience surrounding body image perceptions throughout their IRP, the study was guided by the following research questions:

1. How did the gymnasts' perceptions, thoughts, feelings, and behaviour of body image change from before the injury to after and throughout the rehabilitation process?
2. What influenced the gymnasts' perceptions, thoughts, feelings, and behaviours of body image post injury?
3. How did these influences impact the gymnast?
4. How does the sport of gymnastics (coach, teammates, atmosphere) play a role in the gymnast's overall injury and rehabilitation experience?

Chapter 2: Methods

2.1 Researcher as a Tool

A significant portion of my childhood and adolescence revolved around the sport of gymnastics, as I was a competitive gymnast for 11 years, four of which were spent training in Michigan. The transition to training and competing in the United States was an essential step for achieving my goal of obtaining a Division I scholarship at an American university. However, my progress was halted when I sustained my first major injury in this sport. During my second year of being part of an American gymnastics club, I fell off the uneven bars and fractured the radius and ulna bones in my right forearm. To fully recover, I needed to have surgery, which resulted in the loss of a whole competitive season. At the time, I was afraid of how my goal of college gymnastics would be affected, sad that my teammates were growing closer without me and confused because my future as a gymnast was no longer clear. The longer I was unable to train, the more my body started changing and my mental state suffered. After returning to training, my performance was lacking, which may have been the reason the head coach told me I was 'fat'

and that I should ‘go on a diet’. This deeply affected my self-confidence and perception of my own body image. However, I was determined to get stronger and return to the athlete I was before the injury occurred.

As injury is common in the sport of gymnastics, I saw many of my fellow teammates endure both minor and career-ending injuries and began to wonder if they had a response similar to mine in respect to changes in body image perceptions. This curiosity led me to conduct a literature search, where I noticed a significant gap in this area. I can provide insight into this field of research as I have personally experienced a sport-related injury and its physical and mental repercussions. This will allow me to build rapport and trust with the participant as we share a mutual adversity.

2.2 Worldview

A worldview is “a basic set of beliefs that guide actions” (Guba, 1990, p. 17), which includes postpositivism, and constructivism. An approach frequently seen in qualitative research is the constructivist/interpretivist paradigm (Deshpande, 1983; Sale et al., 2002). This philosophical view includes the belief that knowledge is established through human experience (Crotty, 1998). An individual will derive subjective meaning from these events and will make sense of them based on their social and historical background (Charmaz, 2006; Crotty, 1998; Lincoln et al., 2011; Mertens, 2010).

The constructivist/interpretivist view has been aligned with Stake (1995; 2006), who developed a qualitative approach to case studies using this perspective (Harrison et al., 2017). Stake’s approach emphasizes the importance of discovering the meaning and understanding of experiences in context, as well as having the researcher act as an interpreter and gatherer of interpretations (Harrison et al., 2017; Yazan, 2015). He believes understanding the case “requires

experiencing the activity of the case as it occurs in its context and in its particular situation" (Stake, 2006, p. 2). The constructivist/interpretivist view is appropriate for this case study as I have personal experience of sustaining an injury while training and competing in the sport of gymnastics. As a researcher, I understand an individual's reality is subjective and can have multiple perspectives, and the participant's experience will be different from my own.

2.3 Research Design

Stake's approach to a case study is flexible, allowing for researchers to make changes throughout the design and research process (Stake, 1995; Yazan, 2015). Stake (1995, as cited in Crowe et al., 2011) categorized three main types of case study, which include intrinsic, instrumental, and collective (Crowe et al., 2011). The present study used a retrospective, collective or multiple-case study design. A multiple case study provides the researcher the ability to analyze data within each participant and across participants (Baxter & Jack, 2008). It is also important to note this study was retrospective as it was conducted in a particularly interesting societal context. The COVID-19 pandemic has changed how the entire world functions with sporting events being included. More specifically, gymnastics is not available as a USport in Canada, and at the time of data collection (Fall, 2020), the National Collegiate Athletic Association (NCAA) had not made a public announcement of how the upcoming intercollegiate gymnastics season would progress as every State and Conference had its own procedure and regulations. With the uncertainty of participation in training and competition, the design of the current study was adapted.

2.4 Participants

For inclusion in the study, female college gymnasts were identified as being part of a Division 1 school in the NCAA as gymnastics is not available as a USport in Canada. The

participants consisted of three female intercollegiate level artistic gymnasts who had sustained at least one musculoskeletal injury while training and competing for an American college gymnastics team. Participants were considered if they had sustained a moderate to severe "time-loss" injury, which is defined as being unable to take part fully in training and/or competition for a minimum of 8 days (Fuller et al., 2006). These gymnasts must have also returned to intercollegiate gymnastics after they were cleared to do so by their doctor and trainer. The injury may have been associated with having surgery to progress healing. The injury must have occurred within the last four years at time of recruitment (since 2016). Concussed athletes were not considered for participation in this study due to the potential inability to differentiate between body image changes as a result of injury and cognitive changes from the concussion.

2.5 Procedure

2.5.1 Recruitment

Purposeful sampling was utilized for participant selection (Lincoln & Guba, 1985) in order to select an information-rich case that provided an in-depth exploration of the issue (Patton, 1990). The recruitment process included my own involvement within the gymnastics community to directly contact individuals who fit the criteria of my study and gauge their interest in participating. Further participants were identified through the implementation of snowball sampling. Recruited participants were asked if they were willing to identify any others who may fit the inclusion criteria. Furthermore, electronic recruitment posters were posted via Facebook and Instagram (Appendix A). Once identified as a potential participant, the gymnasts were sent an invitation to participate letter via email (Appendix B). At this time, the participants were not fully enrolled in the study and could make an informed decision if they wanted to participate or not. Once the potential participant indicated they wanted to participate, the consent

form (Appendix C) the demographic questionnaire (Appendix D) was given to the participants via email, along with a few options of dates and times for the initial interview. The participants were given one week to return these documents back to the researcher and schedule an interview.

2.6 Data Collection

2.6.1 Demographic Questionnaire

The demographic questionnaire consisted of 14 open and closed ended questions to collect demographic data (Appendix D). The gathered information included age, academic year, total years as gymnast, type and severity of injury while participating in intercollegiate gymnastics, time out of training/competition as a result of injury, and history of injuries. The athlete's sport participation and injury history were used to establish a baseline for the current inquiry as it may contribute to the cognitive appraisal of the injury, as well as the emotional and behavioural responses related to body image.

2.6.2 Semi-Structured Interviews

Semi-structured interviews were used to obtain a broad perspective from the participant (Creswell, 2014). There were three separate semi-structured interviews conducted via Microsoft Teams between the researcher and participant, which were 45-90 minutes in length and were audio recorded and transcribed verbatim. For each session, participants were sent an email with the meeting link approximately 15 minutes prior to the scheduled interview time. Once the participant and researcher were both in the meeting, the researcher verbalized key points of the informed consent to ensure comprehension to details (e.g., participants will be audio recorded, confidentiality policy, right to withdraw at any time). Participants were also reminded that during the interview they could speak freely, ask questions, and pause at any time. The interview questions were open-ended, which allowed for all possible responses and elicit more details.

Each interview per participant was transcribed before commencing with the next interview, therefore there was approximately 1.5-2 weeks in between the participant being involved in an interview. The first interview collected information on background and the participants experience as a gymnast before the injury, including body image (Appendix E). The second interview focused on the initial response to injury and the rehabilitation process regarding body image perceptions, thoughts, feelings, and behaviours (Appendix E). The third interview included follow-up questions from the first and second interview and focused on the athlete's return to sport incorporating perceptions, thoughts, feelings, and behaviours of body image (Appendix E). It was important to have three interviews so as to not overwhelm the participant with numerous questions at once. This would give them time to reflect on their body image experiences to help them become more comfortable talking about them, as well as to allow time for the researcher to develop more questions based on the received responses. Initially, the interview questions were pilot tested with a female gymnast who had sustained a musculoskeletal injury while training and competing for a college gymnastics team. The pilot interview was used to clarify any question phrasing for understanding with the potential opportunity for this individual and interview to be included in that data. The pilot interview flowed smoothly and there were no major concerns with the guide, resulting in the participant's interview being included in data collection.

2.6.3 Field Notes

Throughout the interviews, the researcher kept fieldnotes which are considered an essential component to uphold rigor in research (Phillippi & Lauderdale, 2017). This included a journal of notes and observations made throughout only the interviews with regard to the emotions, mood, hand gestures and any other memory triggers of both the participant and

interviewer (Deggs & Hernandez, 2018; Neuman, 2011). The purpose of fieldnotes is to improve data by allowing objective and accurate interpretation to offer rich context for analysis (Creswell, 2013). Field notes related to interviews were written in a notebook and titled appropriately for consideration during analysis and to add depth to the results (i.e., auditory information).

2.6.5 Transcript Verification

Following completion of transcribing all the interviews verbatim for each participant, they were sent back to participants via email for transcript verification. Once received, participants had two weeks to review their personal transcript. Transcript verification is a commonly used tool in qualitative research and has the potential to improve accuracy of the research findings by allowing participants to ensure the transcript is reflective of their responses (Hagens et al., 2009). Following the two weeks, the three participants did not reply to the email indicating changes, therefore data analysis commenced.

2.7 Data Analysis

Data analysis was guided by a six-step combined inductive and deductive thematic approach outlined by Braun and Clark (2006) and is described as “a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data” (Braun & Clark, 2006, p.5). This aligns well with Stake’s approach to a case study, as they both value flexibility and the active role of the researcher in the interpretation of data (Braun & Clarke, 2006; 2014; Stake, 1995; 2006). Thematic analysis is a method of reviewing data in order to recognize, examine, and report patterns or themes and includes the following steps: 1) familiarize yourself with the data; 2) generate initial codes; 3) search for themes; 4) review themes; 5) define and name themes; and 6) produce the report. The following is a detailed description of how Braun and Clarke’s (2006) six steps of data analysis were applied to my data.

It is important to note that these six-steps were not followed in a linear step-by-step process and the findings were produced based on going back and forth between these steps (thus inductive and deductive), and more specifically with steps three to five.

The first stage includes familiarizing yourself with the data where I started with manually transcribing the interviews verbatim. Following the transcription process, I read through each of the interviews without any note taking. After the first read through of the transcripts, I re-read them again and made first impression notes of any information that stood out to me. Regarding the demographic questionnaire, I vigilantly read through each participant and made note of significant information, such as whether they kept a journal throughout their rehabilitation process or not and have read it numerous times in regard to the time of data collection. This was important to consider as the current study is retrospective, and their journal may have had potential to remind the participants of stories and experiences.

The second step of analysis described by Braun and Clarke (2006) was to generate initial codes. It is important to note, no specific codes were derived from the demographic questionnaire but rather it was used for providing context to help understand the participant's responses. I used an online program called Delve tool (Twenty to Nine LLC, 2021) to organize the data. The transcripts were uploaded into this program and then words, and phrases were highlighted, and codes were assigned such as, pressure and body image behaviours. These codes were then manually written on a bristol board to visually see the codes obtained (Appendix F). I read each interview 3-5 times and as I continued to re-read them, more words and phrases were highlighted either creating new codes or placed with a code already created and added to the bristol board. This initial coding primarily involved inductively labelling the participant's main ideas when asked to describe their experience with body image and injury. Both my supervisor

and a critical friend have qualitative research knowledge and experience with injury while researching and participating in sport had independently reviewed the data. I had met with my supervisor multiple times and critical friend once throughout this process to discuss these initial codes. This was a turning point for me in the analysis process as their ideas on the initial codes challenged me to think critically when moving forward in order to develop comprehensive themes. For example, I approached them with several codes that did not necessarily reflect my research questions and purpose of the study. Their suggestions guided me and helped me stay focused on what was important when moving forward.

Steps three to five of Braun and Clark's (2006) thematic analysis included searching for themes, review of themes and defining and naming themes were then completed. As more data was being highlighted and added to the initial codes, and written on the Bristol board, I could see categories and themes started to develop to create clusters of similar patterns. I started to draw lines and bubbles connecting various codes that I thought connected to each other and removed codes that were not as relevant across participants as well as those that did not address my research questions. Due to each participant taking part in three interviews which were set up to discuss different time points in the IRP, initially themes were going to be compared across these different stages. Due to the nature of semi-structured interviews, not all the same questions were addressed at the same time points. As well, the participant may have recalled an experience unrelated to the prompt but answered a question that was going to be asked in a later interview. As a result, a deductive approach to analysis was utilized and themes were clustered based on the overarching research questions and then compared across participants without compromising their individual perspective. From the information on the bristol board, a mind map (Appendix G) was created to understand how deductive themes and inductive themes fit together based on

the research questions. The themes were sent to my critical friend to challenge and review my interpretations and were named and defined accordingly with guidance from my supervisor. This process was time consuming and valuable as I was constantly reviewing the data and adapting themes based on discussions with my supervisor and critical friend.

The final step was to produce the final report. This step was to provide a report that evidently described each theme with an abundant amount of evidence from the generated data, as well as integrating auditory information from the field notes. The goal was to clearly communicate the interpretation of all my findings while addressing my research questions and providing a well-supported argument as to why these findings were important.

2.7.1 Trustworthiness/Credibility

In qualitative research, trustworthiness is a method of assessing the total quality of research being conducted (Anney, 2014). Tracy (2010) mentions criteria to achieve high quality research. One of the criteria is credibility which can be accomplished through the process of triangulation. The two types of triangulation that were used in my study were investigator and data triangulation. Initially, after completing the transcriptions of the interviews and the familiarization process, they were sent to my advisor and critical friend who also familiarized themselves with the data. Throughout the data analysis process, my supervisor and I met bi-weekly to discuss and compare codes and themes that were identified independently. A critical friend was also utilized during this process to act as a devil's advocate to intentionally challenge these initial codes and themes. This process was vital, since different analysts arrived at slightly different interpretations from the same data (Corbin & Strauss, 2008; Patton, 2002). This investigator triangulation procedure further enhanced thematic development and credibility of the findings (Fusch et al., 2015). Additionally, data triangulation was applied using three

different sources including a background questionnaire data, three semi-structured interviews with each participant, and the interview field notes.

2.7.1.1 Reflexive Journal

Another criterion of demonstrating trustworthiness is sincerity. Sincerity can be described as the research being conducted in an honest and transparent manner (Tracy, 2010) which was done so through the use of my reflexive journal tool. Over the course of the study, I utilized a reflexive journal that I wrote in to help address any predetermined beliefs I may have had in relation to my topic. This journal was heavily used prior to data collection as well as throughout the data collection process to bring any awareness of the topic to a level of consciousness (Rolls & Relf, 2006). The reflexive journal included initial thoughts I had with respect to the process of the study, reflecting on incoming data as well as upon completing certain steps. Such steps included completion of collecting and reading the demographics questionnaire, and completion of each interview with the participants. It was important for me to take a substantial amount of time to journal throughout this process as it is a topic, I have personal experience with and one that I am very passionate about.

Chapter 3: Results

The participants in this study included three female college gymnasts, two of whom are retired from collegiate gymnastics and one who is still training and competing at an American college. The following descriptions of the participants are included to illustrate the uniqueness of each gymnast and to provide context for the results of this study. The descriptions were generated from field notes, interactions with the gymnasts through the interview process, as well as data from their demographic questionnaires. Pseudonyms were utilized for the purpose of confidentiality.

3.1 Katie

Katie started gymnastics at the age of seven when her mom signed her up for recreational classes because her grandmother noticed she was climbing on everything. She learned gymnastics skills (i.e., cartwheel, handstand) very quickly and one year into recreational practice, she changed gymnastics clubs and was put into a more advanced class. From the beginning, Katie enjoyed the challenge~~s~~ of learning new skills and had fun putting all her energy into this sport. In early high school, Katie received a full-ride scholarship to an American college. In the fall of her second year as a college gymnast, she suffered a partial PCL tear. As a result, she was not able to train for three months, and was focusing only on physical rehabilitation during this time. She did not have many positive words to say to describe her rehabilitation experience, especially when it came to the trainer and the timeline of her recovery. Katie returned to competing in the winter (three months after sustaining the injury) and was able to participate in all events (vault, bars, beam, floor) but preferred not to compete on vault. Overall, Katie did not enjoy her college gymnastics experience.

3.2 Margaret

Margaret learned about the sport of gymnastics around the age of six years old when her sister's friend was teaching her how to do skills (i.e., bridge, cartwheel, handstand, rolls) at their house. Her mom then put her in gymnastics classes to learn skills in a controlled atmosphere. After being in basic gymnastic classes, she was asked by the coaches to join the competitive team. She was a very active child and enjoyed having a place to channel her energy out and have fun, while advancing through the levels. In early high school, Margaret received a scholarship from an American college and accepted it immediately. In the fall of Margaret's first year of college gymnastics, she tore her right ACL and meniscus. This injury required surgery, and she

was unable to train or compete for 6 months following the operation. Approximately one year later, she tore her left ACL and meniscus, which also required surgery. Margaret explained that the rehabilitation process for each knee were very different from one another due to the fact she had different trainers. She is currently in her third year of college and is healthy enough to train and compete.

3.3 Jayla

Jayla participated in many sports at a young age, but she started in a “mom and tot” gymnastics class where one of the coaches saw her and expressed how talented she was. Jayla participated in an evaluation session with the coach and from then on, she was a competitive gymnast. She started competing at age 8 and quickly progressed to level 8, which she expressed is a pretty high level for being so young. She was an elite gymnast throughout high school with a dream of going to the Olympics. Once she realized college gymnastics was an option after being recruited in early high school, she felt that was a better route because it meant that she was able to compete in a sport she loves, while getting her education paid for. In the fall of her second year of college gymnastics, Jayla had a bruised and cracked heel which meant that she could only train on the uneven bars. Shortly after, while training on the bars, she was injured while performing a release skill. She tore the labrum of her shoulder as well as her rotator cuff, which meant she was unable to train for approximately four months. Jayla was undergoing rehabilitation for both her heel and shoulder at the same time. She was cleared to start competing on the uneven bars early winter, and on the floor later winter. At Nationals that spring, Jayla did a tumbling pass on floor where she rolled her ankle and suffered from a high 2nd degree ankle sprain which ended her career as a college gymnast. However, Jayla has no regrets

with how her gymnastics career went and is very grateful she was able to be part of the team as a student-coach for the rest of her college career.

3.4 Themes

A combination of both an inductive and a deductive approach to Braun and Clarke's (2006) thematic data analysis was used to group common information and then themes were produced. After reviewing the transcribed interviews and field notes repeatedly, three general themes were produced. These themes centered on the female college gymnast's IRP and changes in perceived body image. The themes included: (a) Social Group Influences; (b) Heightened Body Image Awareness; (c) College Gymnastics Culture. Deductive themes were produced based on the research questions and the inductive themes were the participants personal experience with body image and injury. Verbatim quotes from each gymnast were used in order for their voices to be 'heard'. Table 1 provides a representation of the themes and subthemes.

Table 1

Themes and Subthemes

Main Themes	**Deductive Subthemes**	**Inductive Subthemes**
Social Group Influences	*Coaches*	*Comments*
		Routinely assessing weight and body composition
	Teammates	*Benefits*
		Comparison
Heightened Body Image Awareness	*Body Image Thoughts and Feelings*	*Appearance*
		Fear/Functionality
	Body Image Behaviours	*Diet*
College Gymnastics Culture	*Do Your Part*	*Pressure*
	Look the Part	*Confidence*
		Performance

3.4.1 Social Group Influences

When reflecting on influences affecting perceptions of body image throughout their college experience, as well as throughout their injury rehabilitation process, a common theme was the presence of social group influences. Two subthemes were apparent and include: (a) The Coaches; and (b) The Teammates. Each subtheme will be discussed.

3.4.1.1 Coaches

When the participants spoke of their coaches, they mentioned how vocal they were towards them regarding weight and appearance. To illustrate how the influence of comments and actions from coaches can play a role in a gymnast's body image perception, Katie recalls an experience:

> I remember, last year, I was putting my hair up in the mirror, and the coach was looking at me and we switched my sophomore year to working out 2 days a week in a tank top and spandex and the other two days was a leotard, and I don't remember what I was wearing but she looked at me and was like I wish everyone on the team had a body like you and she named my other teammate.

Katie felt angered by this comment as she explained, "I was so mad when she said that because what if someone was walking up the stairs right now and you basically just told them because your too tall, you shouldn't be doing this". Another experience Katie recalled was after her injury, she adopted different eating patterns where she restricted what she ate. This led to her coaches making comments about her body during her recovery from injury:

> During the time I was hurt I just remember it being really bad, but the coaches would tell me that I look great and I feel like them reinforcing the fact that I look so good made me not want to change my eating habits.

Another participant, Margaret, reflected on comments that her coaches made at a young age. Even though the comments were made years ago, they still influence how she wants her body to appear as a college gymnast:

> I would say that when I was younger the ideal body was that I wanted to have abs and I wanted to have biceps and I really wanted to have muscles just because whenever I went into the gym the coaches would point that out and be like wow, look at your abs, your muscles are so strong.

For Margaret, regaining her abs and muscle definition after her injury were very important to her as she explained, "when I got my abs back, I felt strong and really confident".

The coaches of Margaret and Katie focused their comments on the athlete's appearance, whereas, in Jayla's case, the objective number on the scale was more important. Jayla was in high school when her coaches started to comment on her weight as she explained:

> So, I was 130 and they were like 10 pounds, and I'm like okay. So, I got down 10 pounds for like 2 days and then it went back. So, they kept saying you did it before you can do it again… no way was that attainable.

This caused her to place significant importance on how much she weighed. Consequently, the number on the scale has always been a focus of hers while training as a college gymnast.

Furthermore, the three participants mentioned that throughout their college career as a gymnast, they were objectively measured by using tools such as a Bod Pod or a DEXA scan to monitor body composition and bone density. Jayla pointed out that everyone on the team would get measured at least three times a year, but her experience was different:

> So we would do one at the beginning of the year, there was definitely 3, then during season then at the end of the year to see your progress. But the thing is, those girls, that were at the ideal only did it those 3x. Girls like me, did it every single month and when you had your individual meeting it was, alright so from this month to month you did really good, you lost 3 pounds, from this month to month, you actually gained back that 3, plus an additional 2. So, we need to go back to what you were 4 months ago.

Alternatively, Katie pointed out why body composition measurements may be important for the coaches to track:

> My freshman year our coaches obviously wanted you to look fit but they didn't care about your weight, they didn't care about the number… they actually did want to know about if the girls put on muscle mass, is the conditioning we are doing working, we need to know that.

Based on these three participants, the coaches can easily be a negative influence on a gymnast's perception of body image. Although some comments from the coaches were made to the participants when they were a young gymnast, the thought of those comments are engraved in their mind and had an effect on them as a college gymnast. Based on Katie and Jayla's reaction and demeaner when discussing their coaches (i.e., speaking louder, shaking their head),

I could see they are very passionate and disappointed by how much influence the coaches have on their perception of body image.

3.4.1.2 The Teammates

Becoming a college gymnast is a significant change and both Katie and Margaret specifically expressed gaining 20 immediate teammates a benefit of college gymnastics because they felt they would always have a source of support. Although, with gaining this support, the opportunity for comparison arose as you are with your teammates the majority of your time as a college student-athlete (i.e., training, travelling, living together). For all three participants, teammate influence had a great impact on their body image perception as they were constantly comparing themselves to others, even without being the subject of specific comments. When Margaret first arrived on campus, her early reaction was, “a lot of the girls on the team when I was a freshman were really skinny but also had abs and stuff and I was like wow am I supposed to look like that?” Margaret’s initial thought to her teammate’s bodies could portray that she was trying to obtain these perceived expectations of what her body should look like.

As a college gymnast, you may or may not compete on all four events (vault, bars, beam, floor) and for Katie, she described this as a benefit when it comes to different body types. “Gymnasts are built differently so that they can do different events better and I feel in college you get to express that more”. Alternatively, the idea of having different body types depending on what event you compete on, provides room for comparison and a negative perception of body image for Jayla:

> You don’t have a pudge on your stomach, you have a little bit of boobs and butt, and your legs will differ based on if you are more the artistic gymnast or power gymnast but the problem that I think with the body image is that you compare yourself to the people who aren’t your body type and that’s what I was doing. So, I was looking at myself who was a powerful gymnast and looking at someone who only did bars and beam, meanwhile I did bars,

> but I also did floor. So, I'm looking at them and going, I'm injured so how can I alter my body to look like them?

This experience with teammate body type comparison resulted in it affecting Jayla's rehabilitation process as she was so focused on trying to achieve a certain look that her teammates may express rather than focusing on healing:

> ...now that I'm injured, I have the time to get fit but also, I should have had the time to heal, to recover and I didn't think of that at the time. I look back and think I was so stupid because I should have taken that time to heal my body, I kept pushing throughout that time and my body was sending me signals hey, this isn't working, stop!

Everyone on the team has one common goal which is ultimately to make it to National Championships and win. Even though that comes with supporting each other and working hard in order to achieve that goal, the majority of the teammate comparison for the participants resulted in having a negative effect on the gymnasts and the way they perceived their body image.

3.4.2 Heightened Body image Awareness

When discussing how the gymnast's perception of body image changed from before their injury to after, it was clear there was a significantly heightened body image awareness. For example, there may be an initial body ideal that you are striving to achieve, whether that be appearance-based or being physically able to perform routines and skills. Jayla explained, "As a gymnast, there is this figure, this image…. Like if you were to close your eyes you would automatically see this girl in a leo[tard], three quarters of their body is exposed, and we are toned but flat everywhere", but Margaret stated, "I feel like body image was never really at the front of my head beforehand and then afterwards it was always present and, on my mind, and sometimes it was in a good way and sometimes in a bad way". Two subthemes emerged which discuss this

body image awareness change: (a) Body Image Thoughts and Feelings; and (b) Body Image Behaviours. Each subtheme will be discussed.

3.4.2.1 Body Image Thoughts and Feelings

Although each participant had a body image ideal before their injury, the thoughts surrounding their body image and functionality intensified after their injury and throughout the rehabilitation process.

When Jayla suffered her injury, she described the change in her body image thoughts as, "[They] definitely got more intense, one of the reasons is because you aren't doing your normal anymore". Furthermore, the presence of an injury made Jayla question her functionality:

> It's so bad, but I always had doubt in my head for myself because I don't want this to happen again, am I actually strong enough to be doing this, am I going too fast, am I going too slow, does this little tweak that I'm feeling right now mean that I should stop. Your body is officially not what it normally was, all these new adjustments that your body is making for these new skills, made me second guess every turn that I did.

In addition to Jayla questioning her body functionality, she highlighted how many fearful thoughts emerged after her injury:

> When I was injured, I had the fear of gaining 5 pounds, I had the fear of getting injured again, I had the fear of not being able to compete again, I had the fear of going from a medium leo to a large leo.

As Jayla talked about the thought of gaining weight and going up in leotard sizes, her voice became louder and more passionate as she explained, "we don't buy large leos, that's another thing that could potentially be a problem". Similarly, Katie thought, "I have to eat less because I don't want to gain weight, and that's what was going on in my head". Alternatively, Margaret's thoughts entailed more of an appearance-based outlook due to weight gain, "I was focusing on my stomach, and I got stretch marks for the first time in freshman year and I was like wow these suck".

Although most of the thoughts regarding body image post-injury were negative, Jayla attempted to implement a positive exercise that could potentially influence the way she thinks about herself:

> On my mirror actually, I wrote "I am beautiful" in the corner in marker, that was one of the ideas that my psych told me to do. And half the days I would believe it, and half the days I wouldn't. I think that kind of explains your questions like were you happy with your body, some days, and other days it looks like I gained 20 pounds over night.

3.4.2.2 Body Image Behaviours

It was very prominent for both Katie and Jayla, that suffering from an injury while in sport precipitated maladaptive body image behaviours. For example, Jayla explained:

> So, when you get injured, you go to okay what do I need to do right now to fix this and then you wake up and your like is it gone? Injuries take forever to heal. My portions at the beginning, very small and then you hear that oh my gosh you are looking so good, and you are doing so great and then you get to a breaking point and crying in the locker room, and they ask what's going on and you are starving.

Similarly, Katie expressed, "I know that when I got hurt and was hurt, I was afraid to gain weight, which is why I was sort of restricting my eating". As soon as each gymnast suffered from their injury, the first behavioural change was an unhealthy change in diet, and Jayla explained why:

> So, all those extra calories, that you would typically burn in a day aren't there anymore and because your body is so used to working out, it still needs energy and food, and then your body goes oh I used to have this big of a plate but now I need a smaller plate but yet I'm still hungry. Then you tell yourself I can't eat this. Some days you go yup not eating it, and some days you double it because you've been starving yourself.

Due to the fearful thought of gaining weight because they are no longer training as much as they are used to, the gymnasts' eating habits were affected.

Another behavioural change that Katie implemented was a change in the way she dressed because she was worried about what other people thought of her:

> I started wearing baggier clothes because I didn't even want people to mention it, that way if they think I look bigger than I am and then when I put a leotard on its like, oh she's actually small and I'm looking smaller than they were thinking.

Similarly, Margaret's behavioural change involved avoiding certain activities, or altering her habits when participating in those activities:

> I remember being at the pool and being very self-conscious of what people were thinking about me. As soon as I got out of the pool, I would wrap myself in a towel or I would just decide not to go in and keep my clothes on.

3.4.3 College Gymnastics Culture

During the interviews, the three participants explained the idea of how gymnastics went from being an individual sport in high school to a team sport in college. Two subthemes emerged which discuss the gymnastics culture in college and how there are additional pressures that exist. These subthemes are: (a) Do Your Part; and (b) Look the Part. Each subtheme will be discussed.

3.4.3.1 Do Your Part

One of the main goals of a college gymnastics team is achieving the highest team score. In order to achieve this goal only the best gymnasts make the line-up for each competition, which is the goal of each gymnast on the team. All three participants gave a description of what a line-up is, which aligned with Katie's explanation, "it's supposed to be the girl that is working the hardest and is most consistent. That's what lineups should be, and then your order should be the most consistent person first, least consistent should be second and then the scores should build from there". They all agree that choosing a line-up is very strategic as Margaret explained, "Basically, ever since you get here until you leave, all four years the coaches notice how you perform, how you do under pressure, how you do when you are tired, and they basically decide who's going to participate in the line-up". The line-up on each event consists of 6 girls but only the top 5 scores count, leaving a small margin for error.

When Jayla was going through her recovery process, she explained what was going through her mind and the internal pressure she was feeling:

> I was like I'm a failure, my teammates need me, I can't do what they need, I can't even do what I'm here to be recruited to do and not only is your team counting on you but so is the whole school's athletics department to put up and show what we are doing.

Whereas Katie felt like she was receiving mixed messages and external pressure to return to do her part:

> The coaches had told me multiple times that they were holding my spot and that it was going to be okay, and no one will take the spot, but then they are also telling me to get back as soon as possible. I felt they just wanted me to return back… I mean they were giving me money for school, so they wanted me to compete and that was frustrating.

In college gymnastics, the importance of doing your part to help the team win competitions is highly emphasized. When an injury occurs, it makes it difficult to fulfill these obligations and it results in both internal and external pressure to return to training and competing as quickly as possible.

3.4.3.2 Look the Part

College gymnasts are constantly being judged on their appearance, whether they are training or competing. Katie corroborated this by saying, "you are wearing a leotard in front of all these people and it's judgemental". While this happens for all gymnasts at any age, it can be more detrimental to those who are on college teams. According to Katie:

> I feel like in college it's amplified more because you are in these glitter leos and all of a sudden you realize you are getting curves now because you are gaining more weight and all kinds of stuff, and it sucks.

The judgement on appearance and performance is amplified during competitions. Jayla explained, "Not even just, trust me, they look at your bows, they look at your hair, they look at your toes and fingers, they look at everything. You need to have this perfect 10 mentality and you are literally deducted on things you do wrong."

The pervasive nature of judgement in this sport necessitates a strong sense of self and high self-esteem. To support this, Katie mentioned, “But it sucks, I mean you wear a leotard every day at practice, you have to wear a leotard to compete, so if you aren’t in a healthy relationship with your body it sucks”. When this is not the case, it can have detrimental effects on a gymnast’s health. According to Margaret, “I think body image to me means being confident and I have noticed that when I don’t feel confident in my body, I will go to thoughts of under fueling or just thoughts of I need to work out more”.

A common sentiment among all participants was that confidence and pride in appearance can influence how they perform. Jayla explained:

> The thing is, we also had mirrors in our gym, and I can tell you every single one of us would walk by it and would do a small look to be like oh man, or yup we are looking good today. Honestly the way that you looked at yourself and if it was yes, you had a good practice and if it was like nope, I’m not liking that, it put extra… like if you did a poor vault you would go oh I’m heavy… bars, if you didn’t make a handstand ugh I’m heavy. But you’re not, you literally weigh the same as the day before and had a perfect practice, it’s all mind games.

Margaret shares a similar point of view by saying, “I notice that when I do have that smidge of being confident, it really does change the way I do gymnastics or the way I feel about myself”. It is important for all competitive gymnasts, no matter what age they are, to meet the appearance standards of the sport. However, the results of this study indicate that the pressure to attain the desired physique is magnified for collegiate athletes, and it has the potential to affect their performance.

Chapter 4: Discussion

The purpose of the current study was to explore potential changes in body image throughout the injured female gymnast’s rehabilitation experience and their return to intercollegiate sport. This study explored the experiences of three participants who were all gymnasts at American Division 1 schools. It appears this is the first study since Chaouch (2013)

to investigate body image and injury within a sport context. Although Chaouch's quantitative study found no significant results, trends suggested injury influenced shifts in perceptions of body image throughout the athlete's rehabilitation and recovery process. More specifically, at the midpoint of the injury rehabilitation, Chaouch (2013) found there was a negative shift in the participants perceived body image but as the athlete became healthy and returned to play, their perceived body image increased and returned back to pre-injury levels. With the present qualitative study, the trends suggested by Chaouch were able to be explored in an effort to learn more about why body image perceptions may have shifted throughout the IRP, as well as how this shift impacts the gymnasts. In the current study, there were three main themes produced from analysis of the data which are all interrelated and provide support for the research questions. These themes include: (1) Social Group Influences; (2) Heightened Body Image Awareness; (3) College Gymnastics Culture. The social group influence theme relates to the second and third research questions, which addresses what influenced body image and how the gymnasts were impacted. The heightened body image awareness theme addresses the first research question regarding how the gymnast's perception of body image change. Lastly, the college gymnastics culture theme addresses the fourth research question of how the sport of gymnastics play a role in the IRP. The following chapter discusses the results regarding past literature, new findings, and implications for future research.

4.1 Theme 1-Social Group Influences

The first theme reflected the social group influences that arise from the coaches and teammates and how this affects the body image of gymnasts. The findings from this theme are related to the second and third research questions of this study, which address what influenced the gymnasts' perceptions, thoughts, feelings, and behaviours toward body image post-injury and

how the gymnasts were impacted by these factors. Originally, these research questions were guided by the integrated model of psychological response to sport injury (Wiese-Bjornstal et al., 1998). This model considers the psychological component of injury recovery for athletes and identifies coaches and teammates as social situational factors that the athlete assesses post-injury. However, the data revealed the influence of coaches and teammates on an athlete's body image is significant throughout a gymnast's career, and not just post-injury, which deviates from the established research questions. Furthermore, the coaches and teammates had distinctive effects, and therefore were separated into two subthemes.

4.1.1 Coaches

A coach often serves as an influential figure in an athlete's life. Prior research has found that coaches have the power to impact their athletes' perceptions of body image positively or negatively (Biesecker & Martz, 1999; Coppola et al., 2014; Weinstein et al., 1995), which can alter the thoughts, feelings, and behaviours of these athletes. A common example of behavioural change involves the modification of eating habits. Coaches may not directly encourage athletes to engage in harmful eating behaviours but may inadvertently cause female athletes to adopt disordered eating behaviours (Heffner et al., 2003). Rosen and Hough (1988) found that two-thirds of their sample of female collegiate gymnasts were told by their coaches that they were too heavy. As a result, 75% of these athletes responded to the coaches' directives to lose weight by using unhealthy weight control methods, such as self-induced vomiting, diet pills and fasting. The current study echoes some of these findings in that all participants reflected on comments made by coaches related to weight and physical appearance. Although some of these comments were made to the participants at a young age, they had a lasting impact and influenced how these gymnasts responded to the IRP. This led to engagement in unhealthy behaviours post-injury,

such as calorie restriction, in order to maintain the physique, the coaches have expressed is desirable. This indicates that what gymnastic coaches said to these specific participants mirrors literature from over 30 years ago.

It is unclear whether the conversation about weight and physical appearance between a coach and their athlete has changed during this time frame. It is known that coach communication with their female athletes can influence the athlete's body image and subsequent health choices (Beckner & Record, 2016), and how coaches approach discussions of weight can impact how female athletes internalize messages about weight management (Biesecker & Martz, 1999; Coppola et al., 2014). For instance, if the coach places an emphasis on appearance and physique, it could lead to the athlete making adjustments to their exercise routine in order to achieve that ideal body type. For Margaret, having 'strong muscles and abs' was important to her because of comments made by her coach when she was a young gymnast. After her injury, she needed to regain her abdominal muscles in order to feel strong and confident again. Alternatively, if the coach places an emphasis on decreasing body weight, it could result in disordered eating habits, such as vomiting or limiting food intake. For Jayla, having coaches routinely assess weight and body fat composition reinforced the need to keep her weight under the arbitrary maximum decided by her coaches. In general, routinely assessing body fat, weighing athletes, and suggesting weight loss through restricting food intake or excessive exercise, are not uncommon for coaches of competitive sports, especially those sports that are aesthetic and weight dependent and can cause athletes to have a distorted body image or unhealthy eating habits (Heffner et al., 2003). Instead of this approach, coaches should be educated on how to positively communicate with their athletes, as certain comments may have a long-term impact on these athletes. For instance, word choices matter and instead of a coach

saying to “suck your gut in”, a more appropriate comment could be to “pull your ribs up.” Furthermore, coaches should be providing feedback focusing on the execution of the skills, such as “keep your legs straight” and “point your toes”, instead of verbal feedback based on appearance. Furthermore, the measurement of a gymnast’s strength and cardiorespiratory fitness should be prioritized over the measurement of weight and body fat, which could be achieved by asking the gymnast open-ended questions on how they physically feel after completing their routines or strength and fitness objective testing (i.e., push-ups, handstand holds, leg lifts, etc.). A possible result of this could be a more positive and trusting relationship, whereby the athlete feels supported by their coach and more willing to share their thoughts and feelings. A benefit of the open communication between coach and athlete could be the promotion of healthy behaviours, leading to an energized, focused, and stronger gymnast.

4.1.2 Teammates

In addition to coaches, teammates can also influence an athlete’s body image. The social comparison theory states that individuals seek to compare themselves to others that are believed to be similar to them, in order to regulate skills and achievements (Festinger, 1954). According to Wheeler and Miyake (1992), when an individual compares themselves to someone who they believe is better (an upward comparison), it may decrease their subjective well-being and can result in negative moods. Conversely, it may lead to improvements in performance, skills and achievements due to more motivation. Furthermore, when social comparison occurs, body dissatisfaction can arise (Stormer & Thompson, 1996). In the current study, the participants’ teammates had a negative effect on their body image perception, as they were constantly comparing themselves to others, even without being the subject of specific comments. For example, Margaret’s initial thoughts after meeting her teammates involved comparing her

physique to theirs and questioning whether she met those perceived expectations; this would be considered an upward comparison. Additionally, two out of three participants reported comparing themselves to their teammates who have different body types. It is important for a college gymnastics team to have diversity in body types because it can lead to being more successful in specific events. For instance, according to Jayla, a gymnast who competes on floor and vault is a ‘power gymnast’ and should be more muscular, in comparison to those who compete on bars and beam, who tend to be leaner. However, this provides room for comparison and can result in body dissatisfaction. To minimize the potential of this occurring, conversations should be had early on in a gymnast’s career so that they become aware and learn to accept that you do not have to have a specific body type in order to be successful in the sport of gymnastics.

Being a part of a college sports team can result in the adoption of habits or behaviours of one’s teammates due to the amount of time that is spent together. Through observing the diet and exercise behaviours of their teammates, and comparing body types, an athlete may be influenced by this. The literature has suggested that teammates may indirectly trigger disordered eating habits among athletes (Muscat & Long, 2008), especially if their teammates are deemed to be successful in their sport (de Sousa Fortes et al., 2015). As a result, athletes may form a correlation between their teammates’ disordered eating habits and athletic achievement (de Sousa Fortes et al., 2015). In the current study, the participants never clearly stated they engaged in these types of behaviours due to their teammate’s habits. However, their comments throughout the interviews imply they were willing to make any necessary behavioural changes in order to perceive themselves as successful. For example, throughout Jayla’s rehabilitation she questioned how to alter her body to look like her teammates which resulted in pushing her body in unhealthy ways.

4.2 Theme 2-Heightened Body Image Awareness

The integrated model of psychological response to sport injury (Wiese-Bjornstal et al., 1998) incorporates the cognitive, emotional, and behavioural responses to injury, however, it does not specifically include body image as an independent factor. In the current study, the data revealed that body image (thoughts, feelings, behaviours) changed after a musculoskeletal injury that required the gymnast to not participate in training for at least three months. The change in the gymnasts' perceptions, thoughts, feelings and behaviour regarding body image throughout the IRP addresses the first research question.

4.2.1 Thoughts and Feelings

According to the psychological response to sport injury model, an athlete undergoes cognitive appraisal of their injury, which involves the determination of what the injury means to them and how they are able to cope with it (Shapiro et al., 2017). This cognitive appraisal incorporates self-perception, which is the view one has of oneself, and can include self-perceived worth, value, general abilities, and specific capabilities (Wiese-Bjornstal et al., 1998). The participants in the current study demonstrated this cognitive appraisal process through their responses during the interviews. For Jayla, she expressed self-doubt about her capabilities, as well as fear of gaining weight, which could lead to going up in leotard size and no longer meeting the aesthetic ideal expected of gymnasts. Similarly, Katie had a fear of gaining weight, which led to the thought of having to eat less so as to prevent that from happening. Therefore, this is how the cognitive appraisal of an injury can result in behavioural changes.

Focusing on body functionality, or what the body can do, has been a technique used to improve body image (Alleva et al., 2015). The connection between body functionality and body image occurs when there is consideration for the individuals' thoughts, feelings, and perceptions

about what their body can do (Alleva et al., 2017). In the current study, the IRP resulted in changes to the participants' thoughts on their body functionality, as they were unable to trust they were strong enough to perform their skills and routines once returned to sport and meet their pre-injury performance standards. This resulted in negative thoughts surrounding their body image. These results support the need to investigate whether incorporating body functionality, and functionality appreciation interventions could improve a competitive athlete's body image post-injury. Currently, there is a paucity of literature on the effectiveness of interventions aiming to promote positive body image in athletes, and especially those athletes who are returning from an injury. However, there are studies which have investigated these types of interventions in the general population. For instance, an online writing-based functionality intervention (i.e., Expand Your Horizon) has significantly improved certain aspects of body image, including body appreciation, body functionality satisfaction and body esteem, in adult women (Alleva et al., 2015). A similar type of intervention could potentially be incorporated into an athlete's rehabilitation program and be useful in the promotion of positive body image post-injury. Furthermore, the results of the current study found there was a change in the participants nutrition behaviours once injured (e.g., food restriction, obsessive thoughts about food). Therefore, it may also be effective to incorporate an intervention which focuses on reducing negative eating behaviours. The Female Athlete Body Project (Stewart et al., 2017) is an interactive, discussion-based intervention that educates and encourages athletes to make small behavioural changes to achieve and maintain a healthy energy balance (Stewart et al., 2019).

4.2.2 Behaviours

In this study, the participants' cognitive appraisal of their injuries influenced their behavioural responses. The most common behavioural change that arose in these participants

involved their eating habits. For all three participants, this stemmed from the fear of gaining weight, since they were no longer training the same amount and at the same intensity as they were pre-injury. This mainly resulted in calorie restriction by reducing portion sizes and eating less frequently. In addition, Katie started to wear baggy clothing, and Margaret avoided certain activities which exposed her body to other people, such as swimming, for fear of being judged. Similar findings were reported by Reel et al. (2018) who investigated disordered eating post-injury in female professional dancers. The most common behavioural response was a reduction in calorie consumption due to the fear of gaining weight and losing the ideal aesthetic since they were not getting regular exercise (Reel et al., 2018). However, Reel et al. (2018) also found that there was an awareness of one's specific nutritional needs to promote recovery, and that calorie restriction can cause more damage to the body because the necessary nutrients are not being consumed in large enough quantities. In the current study, Jayla made an observation that her reduction of calories during the immediate post-injury and rehabilitation phase was 'stupid' and did not promote healing. In general, the participants of this study did not focus on receiving proper nutrition to help them heal and become stronger, and this is an area which should be addressed in the education of these athletes.

4.3 Theme 3- College Gymnastics Culture

In the sport of gymnastics, there are many external and internal pressures urging gymnasts to look and perform at their very best. This is especially true for gymnastics at the collegiate level because it is more team-oriented, so there is the added pressure of being a valuable member of the team by achieving high scores and winning medals. Gymnastics can be considered a high-performance sport, which requires an athlete to make sacrifices for the sport, strive for distinction, accept risks, and play through pain, and accept no limits (Coakley, 2001).

Even if an athlete is injured, these requirements may remain and will play a role in the gymnast's overall injury and rehabilitation experience. The findings in this section address the fourth research question.

4.3.1 Do Your Part

In college gymnastics, it is important to do your part to help the team win competitions. However, when an injury occurs, the gymnast is unable to be an effective member of the team, and they are likely to experience pressure to return to training and competing as soon as possible. Katie's comments support this finding, as she felt pressure from her coaches to begin training again at full capacity. This pressure stemmed from her coaches rushing her through the final stages of her rehabilitation process because they needed her in the line-up to compete in the upcoming competitive season. This is not uncommon, and it is supported by a study that found 58% of gymnasts competed despite injury symptoms (Harringe et al., 2003). Furthermore, while all participants received a scholarship for their education based on the commitment they made to the gymnastics team, Katie and Jayla felt that they were not living up to the conditions of the scholarship due to their injury. Barry (2008) had comparable results, in that the IRP led many participants to feel like they were not part of the team, and they did not have the opportunity to prove themselves, especially if they were injured earlier on in their collegiate gymnastics career. To prevent this feeling of separation and isolation from their team, the injured gymnasts could be involved in other ways, such as becoming a support person for their teammates and coaches. For instance, they could motivate their teammates through their conditioning and keep track of scores at competitions.

4.3.2 Look the Part

For certain sports, the uniform an athlete is required to wear can result in the athlete becoming hyperconscious of their weight and body image (Steinfeldt et al., 2013), and it is well-documented that an athlete's uniform is one of the most frequently reported weight pressures (Greenleaf, 2004; Reel & Gill, 1996, 2001; Reel et al., 2005). In gymnastics, the uniform is very revealing, and can lead to the gymnast feeling that their bodily flaws are exposed for everyone to see (Reel et al., 2013; Steinfeldt et al., 2013). In the current study, Jayla expressed how having to wear a leotard puts pressure on her to have a certain physique, and it is her impression that the size of the leotard matters to the coaches since they never order ones that are size large. To support this, Katie mentioned having to wear a leotard at every practice and competition emphasizes the need for a gymnast to have a healthy relationship with their body. For Margaret, struggling with confidence in her body affects her performance as well as the way she feels about herself, and it leads to her considering the restriction of calories or the completion of extra workouts. This means the required uniform for gymnasts may be a risk factor for developing negative body image and unhealthy behaviours. Furthermore, in gymnastics, an athlete's appearance can be associated with the success of their performance, and this may further increase the risk of these athletes having body image issues and developing disordered eating habits (Reel et al., 2013). It is well-established that a gymnast's appearance is evaluated by judges while wearing a revealing uniform, and this high level of scrutiny can impact a gymnast's score, and therefore the success of their performance, as every little mistake may be noticed. However, it is unclear how an athlete's body image affects their performance in training and competitions. The current study demonstrates that body confidence, an aspect of body image, can influence a gymnast's performance which indicates that there is a significant mental component

to the sport. The lack of research in the area of body image and sport performance needs to be addressed, as it could improve the experience of collegiate gymnasts.

4.4 Summary of Themes

Competitive gymnasts of any age and skill level experience pressure to meet the aesthetic standard of what is deemed acceptable within the sport. This pressure can influence the gymnast's thoughts and feelings about their body, which plays a role in their body image, and could affect their performance. The current study contributes to the understanding of why the aesthetic standard exists in the sport, and how the gymnastics culture and social group influences, such as coaches and teammates, impact an athlete's body image. These influences exist regardless of the injury status of a gymnast. However, once an injury occurs, the results from the current study found the gymnasts have a heightened body image awareness, meaning that their thoughts, feelings and perceptions surrounding body image become more dominant in comparison to their pre-injury state. Furthermore, the culture of the sport, and more specifically college gymnastics, enhances this change in body image because of the pressure the gymnast experiences to 'look the part' and 'do their part'. Unfortunately, this study suggests the change in body image which occurs post-injury is generally negative. However, research suggests it could result in personal growth that could have positive implications in the future. For instance, sport injury is considered to be a type of adversity which has negative consequences, however, it can also bring about positive change in the form of growth (Roy-Davis et al., 2017). Howells et al. (2017) report that indicators of growth following adversity in sport can be intrapersonal (e.g., heightened resilience), interpersonal (e.g., less judgemental), and physical (e.g., enhanced body awareness). If gymnasts receive education throughout the IRP which focuses on healthy and positive ways to get stronger and grow from their experience, it may minimize the formation of

unhealthy habits that are detrimental to the athlete's body image as well as physical and mental health.

4.5 Strengths and Limitations

A strength of this study is my previous background of competitive gymnastics, and personal experiences with sport-related injury and subsequent body image changes. My history and insight into the sport contributed to the understanding of the participant's responses and may have promoted the formation of meaningful connections with the participants. However, I never participated in college gymnastics, and so there is no prior encounter with college gymnastics culture.

There are several recognized limitations of the current study. First, the study focused on collegiate gymnasts. Therefore, results from this study cannot be easily generalized to athletes who are involved in other sports. This is especially true for non-aesthetic sports because the appearance-related pressures in this category of sport may not be as ingrained in the culture like it is in gymnastics. In addition, the participants of this study are currently in college, and so the results may not be generalizable to adolescent gymnasts. A reason for this is because adolescent gymnasts are often pre-pubescent, and so they have not undergone the physical body changes that come with puberty. As well, they could potentially be more sensitive to social group influences, including comments and critiques made by their coaches, family, and teammates. Second, this study investigated female artistic gymnasts only, which does not include rhythmic and male gymnasts, who may have different perceptions of body image due to the nature of their discipline (Pinto et al., 2020). For instance, male gymnasts place a greater emphasis on strength, and are not necessarily as concerned with aesthetics in the same way female gymnasts may be.

A third limitation of this study is the retrospective nature of the design. It would have been preferable to interview the participants pre-injury and then gather data throughout the entire IRP, as well as after they return to sport. This would have allowed for more detailed accounts of their thoughts, feelings, and perceptions at each stage of the process, and it would limit the possibility of recall bias. However, performing a prospective study was not feasible, especially during the COVID-19 pandemic, therefore adaptations were made in order to conduct a feasible and timely study.

4.6 Future Directions and Implications

This is one of the first studies to explore body image and injury within a sport context. The findings from the current study provide a basis of knowledge which can be expanded upon in further studies. As mentioned above, the retrospective study design is considered to be a limitation, and so repeating the study using a prospective study design could be beneficial as it may minimize potential biases, such as recall bias. Additionally, future studies could involve athletes from non-aesthetic sports to investigate how body image plays a role in their sport, and if they experience changes in body image post-injury. Furthermore, the incorporation of male participants in these types of studies will help provide a more complete understanding of how injury affects body image in sport as male athletes may have different aesthetic goals. It is also important to investigate how body image affects athletic performance, as poor sport performance would be a significant concern for any athlete. Finally, another area to consider to further investigate is how the judges may influence the aesthetic look of gymnasts. Typically, judging duties include watching between 30-50 routines in one day on 1 of the 4 events. During the routines, the judges will shorthand record the skills of the routine and at the same time subjectively deduct points for form and technique errors. Once the routine is finished, they may

also deduct points for rhythm and tempo (Valiquette, 1996). Valiquette (1996) explored whether the gymnasts' body type affects the judging component and found that all judges preferred smaller body shape, but this preference did not affect the performance scores award by the judges. More studies in this area are encouraged.

Although the current study focused on the sport of gymnastics, this area of research has significant implications for competitive athletes in other aesthetic sports as well, such as dance, diving and figure skating who sustain a musculoskeletal injury. It is important to be aware that body image is highly individualized, and that any injury can result in body image disturbances. As the rate of injury in athletes is higher than the general population, it is prudent to implement an educational program addressing body image in athletes and how an injury can cause shifts in the thoughts, feelings, and perceptions these athletes have towards their bodies. In addition to educating the athletes on how to respond to body image disturbances, the support team, such as coaches and trainers, should be involved as well. This could mitigate negative body image disturbances, and possibly prevent unhealthy behavioural changes, such as calorie restriction and excessive exercise. As well, knowledge gained from this area of research could potentially be used to develop intervention strategies for body image disturbances in athletes, leading to a more comprehensive and effective rehabilitation program.

4.7 Conclusion

The purpose of this study was to explore body image throughout an injured female gymnast's rehabilitation experience and their return to intercollegiate sport. Through multiple interviews with three participants, the study investigated how body image is impacted by injury and the subsequent return to sport, in these gymnasts. The results highlight: (1) coaches and teammates can influence an athlete's body image throughout their entire gymnastics career; (2)

gymnasts' experience heightened body image awareness post-injury; and (3) the culture of collegiate gymnastics plays a significant role in the body image of gymnasts, both pre- and post-injury. Overall, there needs to be a pronounced shift in the culture of gymnastics, and it is clear gymnasts are ready for this change. As an illustration of the readiness for change, the German Women's Gymnastics team recently wore a unitard at the Tokyo 2020 Olympic Games to bring awareness to sexualization in the sport and convey the message that a gymnast's skill is more important than appearance (Wright & McCluskey, 2021). If the sport of gymnastics embraces this idea, it could have implications for the culture of the sport, and consequently exert a positive influence on a gymnast's body image.

References

Alleva, J. M., Martijn, C., Jansen, A., & Nederkoorn, C. (2014). Body language: Affecting body satisfaction by describing the body in functionality terms. *Psychology of Women Quarterly*, *38*(2), 181–196. https://doi.org/10.1177/0361684313507897

Alleva, J. M., Martijn, C., Van Breukelen, G. J. P., Jansen, A., & Karos, K. (2015). Expand Your Horizon: A programme that improves body image and reduces self-objectification by training women to focus on body functionality. *Body Image*, *15*, 81–89. https://doi.org/10.1016/j.bodyim.2015.07.001

Alleva, J.M., Tylka, T.L., & Kroon Van Diest, A.M. (2017). The functionality appreciation scale (FAS): Development and psychometric evaluation in U.S community women and men. *Body Image, 23, 28-44.* *https://www.sciencedirect.com/science/article/abs/pii/S1740144517301948?via%3Dihub*

Alleva, J. M., Diedrichs, P. C., Halliwell, E., Peters, M. L., Dures, E., Stuijfzand, B. G., & Rumsey, N. (2018). More than my RA: A randomized trial investigating body image improvement among women with rheumatoid arthritis using a functionality-focused intervention program. *Journal of Consulting and Clinical Psychology*, *86*(8), 666–676. https://doi.org/10.1037/ccp0000317

Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, *5*(2), 272-281. https://hdl.handle.net/123456789/256

Arvinen-Barrow, M., & Clement, D. (2017). Preliminary investigation into sport and exercise psychology consultants' views and experiences of an interprofessional care team approach to

sport injury rehabilitation. *Journal of Interprofessional Care*, *31*(1), 66– 74. https://doi.org/10.1080/13561820.2016.1235019

Atalay, A.A., & Gencoz, T. (2008). Critical factors of social physique anxiety: Exercising and body image satisfaction. *Behaviour Change, 25 (3), 178-188.* doi 10.1375/bech.25.3.178

Bane, S. M., & McAuley, E. (1998). Body image and exercise. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 311–324). Morgantown, WV: Fitness Information Technology.

Barry, C.H. (2008). Female Collegiate Gymnasts and Experiences in Sport Retirement Due to Injury. Dissertations. 752.

Beckner, B. N., & Record, R. A. (2016). Navigating the thin-ideal in an athletic world: Influence of coach communication on female athletes' body image and health choices. *Health Communication*, (3), 364-373.

Berger, B.G., Pargman, D., & Weinberg, R.S. (2007). *Foundations of exercise psychology* (2nd ed.). Morgantown, WV: Fitness Information Technology.

Bianco, T., Malo, S., & Orlick, T. (1999). Sport injury and illness: Elite skiers describe their experiences. *Research Quarterly for Exercise and Sport*, *70*(2), 157–169. https://doi.org/10.1080/02701367.1999.10608033

Biesecker, A. C., & Martz, D. M. (1999). Impact of coaching style on vulnerability for eating disorders: An analog study. *Eating Disorders, 7, 235–244.* doi:10.1080/10640269908249289

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*. Co-Action Publishing. https://doi.org/10.3402/qhw.v9.26152

Boidy, J. (2018, September 10). *What happens to your body when you stop working out?* InBody. https://inbodyusa.com/blogs/inbodyblog/what-happens-when-you-stop-working-out/

Carson, F., & Polman, R. C. J. (2008). ACL injury rehabilitation: A psychological case study of a professional rugby union player. *Journal of Clinical Sport Psychology*, *2*(1), 71–90. https://doi.org/10.1123/jcsp.2.1.71

Casanova, B. (2019). Retired gymnasts' reflections on body image and sense of self. LSU Master's Theses. 4993. https://digitalcommons.lsu.edu/gradschool_theses/4993

Cash, T. F. (2012). Cognitive-behavioral perspectives on body image. In T. F. Cash (Ed.), *Encyclopedia of body image and human appearance* (pp. 334–342). Elsevier Academic Press.

Castonguay, A. L., Gilchrist, J. D., Mack, D. E., & Sabiston, C. M. (2013). Body-related pride in young adults: An exploration of the triggers, contexts, outcomes and attributions. *Body Image*, *10*(3), 335–343. https://doi.org/10.1016/j.bodyim.2013.03.001

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Thousand Oaks, CA: Sage.

Chase, M. A., Magyar, T. M., & Drake, B. M. (2005). Fear of injury in gymnastics: Self-efficacy and psychological strategies to keep on tumbling. *Journal of Sports Sciences*, *23*(5), 465–475. https://doi.org/10.1080/02640410400021427

Chen, S., Snyder, S., & Magner, M. (2010). The effects of sport participation on student-athletes' and non-athlete students' social life and identity. *Journal of Issues in*

Intercollegiate Athletics, *3*(1), 176–193. http://csrijiia.org/old/documents/publications/research_articles/2010/JIIA_2010_3_10_176_193_Athletic%20Identity.pdf

Chaouch, E. (2013). Longitudinal analysis of perceived body image, sport commitment, burnout, and athletic injury. *Electronic Theses and Dissertations.* Retrieved from https://scholarworks.uni.edu/cgi/viewcontent.cgi?article=1069&context=etd

Clement, D., Arvinen-Barrow, M., & Fetty, T. (2015). Psychosocial responses during different phases of sport-injury rehabilitation: A qualitative study. *Journal of Athletic Training*, *50*(1), 95–104. https://doi.org/10.4085/1062-6050-49.3.52

Coakley, J. J. (2001). Sport in Society; *Issues and Controversies*, 7th Ed. New York, NY: MC: Grow- Hill.

Coppola, A. M., Ward, R. M., & Freysinger, V. J. (2014). Coaches' communication of sport body image: Experiences of female athletes. *Journal of Applied Sport Psychology*, *26*(1), 1–16. https://doi.org/10.1080/10413200.2013.766650

Creswell, John W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Crotty, M. (1998). *The foundations of social research*. Thousand Oaks, CA: SAGE Publications.

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, *11*. https://doi.org/10.1186/1472288-11-100

Daly, R. M., Bass, S. L., & Finch, C. F. (2001). Balancing the risk of injury to gymnasts: How effective are the counter measures? *British Journal of Sports Medicine*. https://doi.org/10.1136/bjsm.35.1.8

Davison, K. K., Earnest, M. B., & Birch, L. L. (2002). Participation in aesthetic sports and girls' weight concerns at ages 5 and 7 years. *International Journal of Eating Disorders*, *31*(3), 312–317. https://doi.org/10.1002/eat.10043

De Bruin, A. P., Oudejans, R. R. D., & Bakker, F. C. (2007). Dieting and body image in aesthetic sports: A comparison of Dutch female gymnasts and non-aesthetic sport participants. *Psychology of Sport and Exercise*, *8*(4), 507–520. https://doi.org/10.1016/j.psychsport.2006.10.002

De Bruin, A. P., Oudejans, R. R. D., Bakker, F. C., & Woertman, L. (2011). Contextual body image and athletes' disordered eating: The contribution of athletic body image to disordered eating in high performance women athletes. *European Eating Disorders Review*, *19*(3), 201–215. https://doi.org/10.1002/erv.1112

Deggs, D., & Hernandez, F. (2018). Enhancing the value of qualitative field notes through purposeful reflection. *The Qualitative Report*, *23*(10), 2552. https ://nsuworks.nova.edu/cgi/viewcontent.cgi ?article=3569&context=tqr

Deshpande, R. (1983). "Paradigms Lost": On theory and method in research in marketing. *Journal of Marketing*, *47*(4), 101. https://doi.org/10.2307/1251403

de Sousa Fortes, L., Ferreira, M. E. C., de Oliveira, S. M. F., Cyrino, E. S., & Almeida, S. S. (2015). A socio-sports model of disordered eating among Brazilian male athletes. *Appetite*, *92*, 29-35.

Dick, R. W. (1991). Eating disorders in NCAA athletic programs. *Athletic Training*, *26*, 136-140.

Fardouly, J., & Vartanian, L. R. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body Image, 12*(1), 82–88. https://doi.org/10.1016/j.bodyim.2014.10.004

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7 (2), 117-140.* https://doi.org/10.1177/001872675400700202

Flett, G. L., Hewitt, P. L., & Dyck, D. G. (1989). Self-oriented perfectionism, neuroticism and anxiety. *Personality and Individual Differences, 10*(7), 731-735 http://dx.doi.org/10.1016/0191-8869(89)90119-0

Frogley, M., Oliver, E. & Palmer, C. (2018). Marvel, machine or malnourished: exploring the sociology of the body in Women's Artistic Gymnastics. *Journal of Qualitative Research in Sports Studies,* 12(1), 235-262

Fobair, P., Stewart, S. L., Chang, S., D'Onofrio, C., Banks, P. J., & Bloom, J. R. (2006). Body image and sexual problems in young women with breast cancer. *Psycho-Oncology, 15*(7), 579–594. https://doi.org/10.1002/pon.991

Forsdyke, D., Smith, A., Jones, M., & Gledhill, A. (2016). Psychosocial factors associated with outcomes of sports injury rehabilitation in competitive athletes: A mixed studies systematic review. *British Journal of Sports Medicine*. BMJ Publishing Group. https://doi.org/10.1136/bjsports-2015-094850

Fusch, P., Fusch, G. E., & Ness, L. R. (2018). Denzin's paradigm shift: Revisiting triangulation in qualitative research. *Journal of Social Change, 10*(1), 2. https://doi.org/10.5590/JOSC.2018.10.1.02

Fuller, C. W., Ekstrand, J., Junge, A., Anderson, T. E., Bahr, R., Dvorak, J., ..., Meeuwisse, W. H. (2006). Consensus statement on injury definitions and data collection procedures in

studies of football (soccer) injuries. *Scandinavian Journal of Medicine and Science in Sports, 16,* 83-92. doi: 10.1136/bjsm.2005.025270

Greenleaf, C. (2002). Athletic body image: Exploratory interviews with former female competitive athletes. *Women in Sport and Physical Activity Journal, 11, 63-88.*

Greenleaf, C. (2004). Weight pressures and social physique anxiety among collegiate synchronized skaters. *Journal of Sport Behavior, 27*, 260–276.

Guba, E. G. (1990). The alternative paradigm dialog. *The Paradigm Dialog*. https://doi.org/10.1080/1357527032000140352

Haase, A. M. (2009). Physique anxiety and disordered eating correlates in female athletes: Differences in team and individual sports. *Journal of Clinical Sport Psychology*, *3*(3), 218–231. https://doi.org/10.1123/jcsp.3.3.218

Haase, A.M., Prapavessis, H., & Owens, R.G. (2002). Perfectionism, social physique anxiety and disordered eating: a comparison of male and female elite athletes. *Psychology of Sport and Exercise, 3 (3), 209-222.* doi: 10.1016/S1469-0292(01)00018-8

Hart, E.A., Leary, M.R., & Rejeski, W.J. (1989). The measurement of social physique anxiety. *Journal of Sport and Exercise Psychology, 11, 94-104.* https://psycnet.apa.org/record/1989-28096-001

Harringe, M.L., Lindblad, S., & Werner, S. (2004). Do team gymnasts compete in spite of symptoms from an injury? *British Journal of Sports Medicine, 38, 398-401.* doi: 10.1136/bjsm.2002.001990

Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case study research: Foundations and methodological orientations. *Forum Qualitative Sozialforschung*, *18*(1). https://doi.org/10.17169/fqs-18.1.2655

Hausenblas, H. A., & Downs, D. S. (2001). Comparison of Body Image between Athletes and Nonathletes: A Meta-Analytic Review. *Journal of Applied Sport Psychology*. https://doi.org/10.1080/104132001753144437

Heffner, J. L., Ogles, B. M., Gold, E., Marsden, K., & Johnson, M. (2003). Nutrition and eating in female college athletes: A survey of coaches. Eating Disorders, 11, 209–220. doi:10.1080/10640260390218666

Herring, S. A., Boyajian-O'Neill, L. A., Coppel, D. B., Daniels, J. M., Gould, D., Grana, W., … Putukian, M. (2006, November). Psychological issues related to injury in athletes and the team physician: A consensus statement. *Medicine and Science in Sports and Exercise*. https://doi.org/10.1249/mss.0b013e31802b37a6

Hewitt, P.L., Flett, G.L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders, 18,* 317-326. doi: 10.1002/1098108x(199512)18:4<317::aid eat2260180404>3.0.co;2-2

Hootman, J. M., Dick, R., & Agel, J. (2007). Epidemiology of collegiate injuries for 15 sports: Prevention initiatives. *Journal of Athletic Training*, *42*(2), 311–319. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1941297&tool=pmcentrez&rendertype=abstract

Hopkins, L. (2014, October 23). *An intro to Collegiate Gymnastics.* The Gymternet. https://thegymter.net/2014/10/23/an-intro-to-collegiate-gymnastics/

Howells, K., Sarkar, M., & Fletcher, D. (2017). Can athletes benefit from difficulty? A systematic review of growth following adversity in competitive sport. *Progress in Brain Research*, *16*, 37–48.

Iles, D., Khan, R., Naidoo, K., Kearney, R., Myers, J., & Reid, F. (2017). The impact of anal sphincter injury on perceived body image. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, *212*, 140–143. https://doi.org/10.1016/j.ejogrb.2017.03.024

Jankauskiene, R., & Pajaujiene, S. (2012). Disordered eating attitudes and body shame among athletes, exercisers and sedentary female college students. *Journal of Sports Medicine and Physical Fitness*, *52*(1), 92–101.

Johnston, L. H., & Carroll, D. (1998). The context of emotional responses to athletic injury: A qualitative analysis. *Journal of Sport Rehabilitation*, *7*(3), 206–220. https://doi.org/10.1123/jsr.7.3.206

Kerr, Z. Y., Hayden, R., Barr, M., Klossner, D. A., & Dompier, T. P. (2015). Epidemiology of national collegiate athletic association women's gymnastics injuries, 2009-2010 through 2013-2014. *Journal of Athletic Training*, *50*(8), 870–878. https://doi.org/10.4085/1062-6050-50.7.02

Kerr, Z. Y., Lynall, R. C., Roos, K. G., Dalton, S. L., Djoko, A., & Dompier, T. P. (2017). Descriptive epidemiology of non-time-loss injuries in collegiate and high school student-athletes. *Journal of Athletic Training*, *52*(5), 446–456. https://doi.org/10.4085/1062- 6050-52.2.15

Kolt, G. S., & Kirkby, R. J. (1999). Epidemiology of injury in elite and subelite female gymnasts: A comparison of retrospective and prospective findings. *British Journal of Sports Medicine*, *33*(5), 312–318. https://doi.org/10.1136/bjsm.33.5.312

Krane, V., Waldron, J., Stiles-Shipley, J., & Michalenok, J. (2001). Relationships among body satisfaction, social physique anxiety, and eating behaviors in female athletes and exercisers. *Journal of Sport Behavior*, *24*(3), 247. https://psycnet.apa.org/record/2001-18137-002

Krane, V., Waldron, J., Michalenok, J., & Stiles-Shipley, J. (2016). Body image concerns in female exercisers and athletes: A feminist cultural studies Perspective. *Women in Sport and Physical Activity Journal*, *10*(1), 17–54. https://doi.org/10.1123/wspaj.10.1.17

Krasnow, D., Mainwaring, L., & Kerr, G. (1999). Injury, stress, and perfectionism in young dancers and gymnasts. *Journal of Dance Medicine & Science, 3,* 51–58.

Krents, E. M., & Warschburger, P. (2011). Sports-related correlates of disordered eating in aesthetic sports. *Psychology of Sport and Exercise, 12(4), 375-382. https://www.sciencedirect.com/science/article/abs/pii/S1469029211000306*

Kroshus, E. (n.d.). *Mind, Body and Sport: Risk Factors in the sport environment.* NCAA. http://www.ncaa.org/sport-science-institute/mind-body-and-sport-risk-factors-sport-environment

Kamphoff, C. S., Thomae, J., & Hamson-Utley, J. J. (2013). Integrating the psychological and physiological aspects of sport injury rehabilitation: Rehabilitation profiling and phases of rehabilitation. In *The Psychology of Sport Injury and Rehabilitation* (pp. 133–155). Taylor and Francis. https://doi.org/10.4324/9780203552407

Koivula, N., Hassmén, P., & Fallby, J. (2002). Self-esteem and perfectionism in elite athletes: Effects on competitive anxiety and self-confidence. *Personality and Individual Differences*, *32*(5), 865–875. https://doi.org/10.1016/S0191-8869(01)00092-7Lincoln,

Y.S., & Guba, E.G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage.

Lincoln, Yvonna S.; Lynham, Susan A. & Guba, Egon G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited in qualitative research. In Norman K. Denzin & Yvonna S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp.97-128). Thousand Oaks, CA: Sage.

Lindner, K. J., & Caine, D. J. (1990). Injury patterns of female competitive club gymnasts. *Canadian Journal of Sport Sciences = Journal Canadien Des Sciences Du Sport*, *15*(4), 254–261. https://doi.org/10.1097/00042752-199104000-00023

Loland, N. W. (1999). Some contradictions and tensions in elite sportsmen's attitudes towards their bodies. *International Review for the Sociology of Sport*, *34*(3), 291–302. https://doi.org/10.1177/101269099034003005

Madigan, D. J., Stoeber, J., Forsdyke, D., Dayson, M., & Passfield, L. (2017). Perfectionism predicts injury in junior athletes: Preliminary evidence from a prospective study. *Journal of Sport Sciences, 36 (5), 545-550.* *https://www.tandfonline.com/doi/abs/10.1080/02640414.2017.1322709*

Martens, M. P., Dams-O'Connor, K., & Beck, N. C. (2006). A systematic review of college student-athlete drinking: Prevalence rates, sport-related factors, and interventions. *Journal of Substance Abuse Treatment*, *31*(3), 305–316. https://doi.org/10.1016/j.jsat.2006.05.004

Marquez, D. X., & McAuley, E. (2001). Physique anxiety and self-efficacy influences on perceptions of physical evaluation. *Social Behavior and Personality: An International Journal*, *29*, 649–659 doi: https://doi.org/10.2224/sbp.2001.29.7.649

May, IR, & Sieb, G.E. (1987). Athletic injuries: Psychosocial factors in the onset, sequelae, rehabilitation and prevention. In IR May and M.I Asken (Eds.), *Sport Psychology*, PMA Publishing.

McAuley, E., Bane, S. M., Rudolph, D. L., & Lox, C. L. (1995). Physique anxiety and exercise in middle-aged adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *50B*, P229–P235. doi:

https://experts.illinois.edu/en/publications/physique-anxiety-and-exercise-in-middle- aged-adults

Mertens, D. (2009). *Transformative research and evaluation.* New York: Guilford.

Menzel, J. E., & Levine, M. P. (2011). Embodying experiences and the promotion of positive body image: The example of competitive athletics. In *Self-objectification in women: Causes, consequences, and counteractions.* (pp. 163–186). American Psychological Association. https://doi.org/10.1037/12304-008

Moin, V., Duvdevany, I., & Mazor, D. (2009). Sexual identity, body image and life satisfaction among women with and without physical disability. *Sexuality and Disability*, *27*(2), 83– 95. https://doi.org/10.1007/s11195-009-9112-5

National Collegiate Athletic Association. (2012). *National study of substance abuse trends among NCAA college student athletes. http://www.ncaa.org/about/resources/research/ncaa-student-athlete-substanceuse-study*

Muscat, A. C., & Long, B. C. (2008). Critical comments about body shape and weight: Disordered eating of female athletes and sport participants. *Journal of Applied Sport Psychology, 20, 1–24.* doi: 10.1080/10413200701784833

Myer, G., Faigenbaum, A., Foss, K., Xu, Y., Khoury, J., Dolan, L., McCambridge, T., & Hewett, T. (2014). Injury initiates unfavourable weight gain and obesity markers in youth. *British Journal of Sports Medicine, 48(20), 1477- 1481*. doi: 10.1136/bjsports-2012-091988

Neuman, W.L. (2011) *Social research methods: Qualitative and quantitative approaches*. 7th Edition, Boston: Pearson.

Nippert, A. H. (2005). *"I have four months to compete, eight months to heal": Playing through pain and injuries in girls' interscholastic gymnastics*. *ProQuest Dissertations and Theses*.

University of Minnesota. Retrieved from http://fg2fy8yh7d.search.serialssolutions.com/directLink?&atitle=“I+have+four+months+toc compete%2C+eight+months+to+heal”%3A+Playing+through+pain+and+injuries+in+girls%27+interscholastic+gymnast

Nugent, J. (2020). The Relationship Between General Anxiety, Social Physique Anxiety, and Body Image in Collegiate Athletes and Non-Athletes. *West Chester University Master's Theses. 129*. https://digitalcommons.wcupa.edu/all_theses/129

O'Kane, J. W., Levy, M. R., Pietila, K. E., Caine, D. J., & Schiff, M. A. (2011). Survey of injuries in Seattle area levels 4 to 10 female club gymnasts. *Clinical Journal of Sport Medicine*, *21*(6), 486–492. https://doi.org/10.1097/JSM.0b013e31822e89a8

Orth, U., Robins, R. W., & Soto, C. J. (2010). Tracking the trajectory of shame, guilt, and pride across the life span. *Journal of Personality and Social Psychology*, *99*(6), 1061– 1071. https://doi.org/10.1037/a0021342

Pacht, A.R. (1984). Reflections on perfectionism. *American Psychologist, 39, 386-390*. http://dx.doi.org/10.1037/0003-066X.39.4.386

Patel, D. R., Pratt, H. D., & Greydanus, D. E. (2003). Treatment of adolescents with anorexia nervosa. *Journal of Adolescent Research, 18,* 244-260. https://doi.org/10.1177/0743558403018003004

Patton, M. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, CA: Sage Publications.

Phillippi, J., & Lauderdale, J. (2018). A guide to field notes for qualitative research: Context and conversation. *Qualitative Health Research*, *28*(3), 381–388. https://doi.org/10.1177/1049732317697102

Phillips, S., & Halder, D. (2019). Negative body image and low self esteem: A study of athletes for solutions through inspirational intrinsic positive self-esteem. *International Journal of Recent Innovations in Academic Research, 3(8)*, 96-107. https://www.ijriar.com/docs/volume3/issue8/IJRIAR-11.pdf

Pila, E., Brunet, J., Crocker, P. R. E., Kowalski, K. C., & Sabiston, C. M. (2016). Intrapersonal characteristics of body-related guilt, shame, pride, and envy in Canadian adults. *Body Image*, *16*, 100–106. https://doi.org/10.1016/j.bodyim.2016.01.001

Pinto, A., Dolan, E., Baldissera, G., Gonçalves, L., Jardim, F., Mazzolani, B., Smaira, F., Sato, P., Scagliusi F., & Gualano, B. (2020). "Despite being an athlete, I am also a human-being": Male elite gymnasts' reflections on food and body image. *European Journal of Sport Science, 20:7, 964-972*. doi: 10.1080/17461391.2019.1682059

Prentice, W.E. (2011). Principles of athletic training: A competency-based approach (14th ed.) New York: McGraw-Hill.

Putukian, M. (2016). The psychological response to injury in student athletes: A narrative review with a focus on mental health. *British Journal of Sports Medicine*. BMJ Publishing Group. https://doi.org/10.1136/bjsports-2015-095586

Quinn, A. M., & Fallon, B. J. (1999). The changes in psychological characteristics and reactions of elite athletes from injury onset until full recovery. *Journal of Applied Sport Psychology*, *11*(2), 210–229. https://doi.org/10.1080/10413209908404201

Reel, J. J., & Gill, D. L. (1996). Psychosocial factors related to eating disorders among high school and college female cheerleaders. *Sport Psychologist, 10, 195-206.*

Reel, J. J., & Gill, D. L. (2001). Slim enough to swim? Weight pressures for competitive swimmers and coaching implications. *Sport Journal, 4, 1-5.*

Reel, J. J., Petrie, T. A., SooHoo, S., & Anderson, C. M. (2013). Weight pressures in sport: Examining the factor structure and incremental validity of the weight pressures in sport - Females. *Eating Behaviors*, *14*(2), 137–144. https://doi.org/10.1016/j.eatbeh.2013.01.003

Reel, J. J., & Voelker, D. (2012). Sculpted to perfection: Addressing and managing body image concerns and disordered eating among athletes. In *Athletic Insight's Writings in Sport Psychology* (pp. 301–316). Nova Science Publishers, Inc.

Reel, J.J., Podlog, L., Hamilton, L., Greviskes, L., Voelker, D., & Gray, C. (2018). Injury and disordered eating behaviours: What is the connection for female professional dancers? *Journal of Clinical Sport Psychology, 12, 365-381.* https://doi.org/10.1123/jcsp.2017-0007

Reel, J. J., SooHoo, S., Jamieson, K. M., & Gill, D. L. (2005). Femininity to the extreme: Body image concerns among college female dancers. *Women in Sport & Physical Activity Journal, 14*(1), 39-51.

Rice, S. M., Purcell, R., De Silva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016, September 1). The mental health of elite athletes: A narrative systematic review. *Sports Medicine*. Springer International Publishing. https://doi.org/10.1007/s40279-016-0492-2

Rolls, L., & Relf, M. (2006). Bracketing interviews: Addressing methodological challenges in qualitative interviewing in bereavement and palliative care. *Mortality*, *11*(3), 286-305. https://doi.org/10.1080/13576270600774893

Rosen, L. W., & Hough, D. O. (1988). Pathogenic weight control behaviors in female college gymnasts. Physician and Sports medicine, 16, 141-146.

Roy-Davis, K., Wadey, R., & Evans, L. (2017). A grounded theory of sport injury-related growth, *Sport, Exercise, and Performance Psychology*, *6*, 35–52.

Russell, K. M. (2004). On versus off the pitch: The transiency of body satisfaction among female rugby players, cricketers, and netballers. *Sex Roles*, *51*(9–10), 561–574. https://doi.org/10.1007/s11199-004-5466-4

Sabiston, C. M., Sedgwick, W. A., Crocker, P. R. E., Kowalski, K. C., & Mack, D. E. (2007). Social physique anxiety in adolescence: An exploration of influences, coping strategies, and health behaviors. *Journal of Adolescent Research*, *22*(1), 78–101. https://doi.org/10.1177/0743558406294628

Sabiston, C. M., Brunet, J., Kowalski, K. C., Wilson, P. M., Mack, D. E., & Crocker, P. R. E. (2010). The role of body-related self-conscious emotions in motivating women's physical activity. *Journal of Sport and Exercise Psychology*, *32*(4), 417–437. https://doi.org/10.1123/jsep.32.4.417

Sabiston, C. M., Pila, E., Pinsonnault-Bilodeau, G., & Cox, A. E. (2014). Social physique anxiety experiences in physical activity: a comprehensive synthesis of research studies focused on measurement, theory, and predictors and outcomes. *International Review of Sport and Exercise Psychology*, *7*(1), 158–183. https://doi.org/10.1080/1750984X.2014.904392

Sabiston, C. M., Pila, E., Crocker, P. R. E., Mack, D. E., Wilson, P. M., Brunet, J., & Kowalski, K. C. (2020). Changes in body-related self-conscious emotions over time among youth female athletes. *Body Image*, *32*, 24–33. https://doi.org/10.1016/j.bodyim.2019.11.001

Sabiston, C. M., & Brunet, J. (2021). *Body image in sport and exercise. In P. Crocker., C. Sabiston & M. McDonough (Eds.), Sport and exercise psychology: A Canadian perspective (pp.293-314.) Canada: Pearson*

Sale, J. E. M., Lohfeld, L. H., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and Quantity*, *36*(1), 43–53. https://doi.org/10.1023/A:1014301607592

Shapiro, J. L., Brewer, B. W., Cornelius, A. E., & Van Raalte, J. L. (2017). Patterns of emotional response to ACL reconstruction surgery. *Journal of Clinical Sport Psychology*, *11*(3), 169–180. https ://doi.org/10.1123/jcsp.2016-0033

Smolak, L., Murnen, S. K., & Ruble, A. E. (2000). Female athletes and eating problems: A meta analysis. *International Journal of Eating Disorders*, *27*, 371-380. 10.1002/(sici)1098-108x(200005)27:4<371::aid-eat1>3.0.co;2-y

Soulliard, Z. A., Kauffman, A. A., Fitterman-Harris, H. F., Perry, J. E., & Ross, M. J. (2019). Examining positive body image, sport confidence, flow state, and subjective performance among student athletes and non-athletes. *Body Image*, *28*, 93–100. https://doi.org/10.1016/j.bodyim.2018.12.009

Slobounov, S. (2008). *Injuries in athletics: Causes and consequences*. *Injuries in Athletics: Causes and Consequences* (pp. 1–544). Springer US. https://doi.org/10.1007/978-0-387-72577-2

Stake, Robert E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Stake, Robert E. (2006). *Multiple case study analysis*. New York, NY: Guilford.

Steinfeldt, J.A., Zakrajsek, R.A., Bodey, K.J., Middendorf, K.G., & Martin, S.B. (2012). Role of uniforms in the body image of female college volleyball players. *The Counselling Psychologist, 1-29.* doi: 10.1177/0011000012457218

Stewart, T., Pollard, T., Hildebrandt, T., Beyl, R., Wesley, N., Kilpela, L., & Becker, C. (2017). The female athlete body (FAB) study: Rationale, design, and baseline characteristics. *Contemporary Clinical Trials, 60, 63-67.* doi: 10.1016/j.cct.2017.06.005

Stewart, T., Pollard, T., Hildebrandt, T., Wesley, N., Kilpela, N., & Becker, C. (2019). The female athlete body study: 18-month outcomes in eating disorder symptoms and risk factors. *International Journal of Eating Disorders, 52(11), 1291-1300.* doi: 10.1002/eat.23145

Stoltenburg, A. L., Kamphoff, C. S., & Bremer, K. L. (2012). Transitioning out of sport: The psychosocial effects of collegiate athletes' career-ending injuries. In *Athletic Insight's Writings in Sport Psychology* (pp. 113–132). Nova Science Publishers, Inc.

Stormer, S. M., & Thompson, J. K. (1996). Explanations of body image disturbance: A test of maturational status, negative verbal commentary, social comparison, and sociocultural hypotheses. *International Journal of Eating Disorders, 19*(2), 193–202. https://doi.org/10.1002/(SICI)1098-108X(199603)19:2<193::AID-EAT10>3.0.CO;2-W

Stoutjesdyk, D., & Jevne, R. (1993). Eating disorders among high performance athletes. *Journal of Youth and Adolescence, 22,* 272-282. https://eric.ed.gov/?id=EJ466271

Sundgot-Borgen, J. (1994). Eating disorders in female athletes. *Sports Medicine, 17,* 176- 188. https://link.springer.com/article/10.2165/00007256-199417030-00004

Sundgot-Borgen, J. (1994). Risk and trigger factors for the development of eating disorders in female elite athletes. *Medicine and Science in Sports and Exercise*, *26*(4), 414–419. https://doi.org/10.1249/00005768-199404000-00003

Sundgot-Borgen, J., & Torstveit, M. K. (2010, October). Aspects of disordered eating continuum in elite high-intensity sports. *Scandinavian Journal of Medicine and Science in Sports*. https://doi.org/10.1111/j.1600-0838.2010.01190.x

Sweeney, E. A., Howell, D. R., James, D. A., Potter, M. N., & Provance, A. J. (2018). Returning to sport after gymnastics injuries. *Current Sports Medicine Reports*, *17*(11), 376–390. https://doi.org/10.1249/JSR.0000000000000533

Taleporos, G., & McCabe, M. P. (2002). Body image and physical disability – personal perspectives. *Social Science and Medicine*, *54*(6), 971–980. https://doi.org/10.1016/S0277-9536(01)00069-7

Thatcher, J., Kerr, J., Amies, K., & Day, M. (2007). A reversal theory analysis of psychological responses during sports injury rehabilitation. *Journal of Sport Rehabilitation*, *16*(4), 343–362. https://doi.org/10.1123/jsr.16.4.343

Thompson, R. A., & Sherman, R. T. (1999). Athletes, athletic performance, and eating disorders: Healthier alternatives. *Journal of Social Issues, 55(2),* 317-337.

Tracey, J. (2003). The emotional response to the injury and rehabilitation process. *Journal of Applied Sport Psychology*, *15*(4), 279–293. https://doi.org/10.1080/714044197

Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837-851. https://doi.org/10.1177/1077800410383121

Varnes, J. R., Stellefson, M. L., Janelle, C. M., Dorman, S. M., Dodd, V., & Miller, M. D. (2013, September). A systematic review of studies comparing body image concerns among female

college athletes and non-athletes, 1997-2012. *Body Image*. https://doi.org/10.1016/j.bodyim.2013.06.001

Twenty to Nine LLC. (2021). Delve [online qualitative analysis software]. New York, NY: Available from delvetool.com

Vartanian, L.R., Wharton, C.M., & Green, E.B. (2012). Appearance vs. health motives for exercise and for weight loss. *Psychology of Sport & Exercise, 13*, 251-256.

Valiquette, S. (1996). *The effects of gymnast's body shape on the judging of gymnastics.* [Master dissertation, McGill University]. Retrieved from https://www.collectionscanada.gc.ca/obj/s4/f2/dsk2/ftp01/MQ29575.pdf

Voelker, D. K., Petrie, T. A., Huang, Q., & Chandran, A. (2019). Bodies in Motion: An empirical evaluation of a program to support positive body image in female collegiate athletes. *Body Image*, *28*, 149–158. https://doi.org/10.1016/j.bodyim.2019.01.008

Walker, N., Thatcher, J., & Lavallee, D. (2007, July). Review: Psychological responses to injury in competitive sport: A critical review. *Journal of The Royal Society for the Promotion of Health*. https://doi.org/10.1177/1466424007079494

Weinstein, M. D., Smith, M. D., & Wiesenthal, D. L. (1995). Masculinity and hockey violence. Sex Roles, 33, 831–847. doi:10.1007/BF01544782

Wiese-Bjornstal, D. M., Smith, A. M., Shaffer, S. M., & Morrey, M. A. (1998). An integrated model of response to sport injury: Psychological and sociological dynamics. *Journal of Applied Sport Psychology*, *10*(1), 46–69. https://doi.org/10.1080/10413209808406377

Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology*, *62*(5), 760–773. https://doi.org/10.1037/0022-3514.62.5.760

Wright, R., & McCluskey, M. (2021, July 26). *Germany's gymnasts wear body-covering unitards, rejecting 'sexualization' of sport.* CNN. Retrieved from https://www.cnn.com/2021/07/26/sport/tokyo-germany-unitard-intl-scli-spt/index.html

Yazan, B., & De Vasconcelos, I. C. O. (2016). Three approaches to case study methods in education: Yin, Merriam, and Stake. *Meta: Avaliacao*, *8*(22), 149–182. https://doi.org/10.22347/2175-2753v8i22.1038

Appendix A: Recruitment Poster

STUDY

PARTICIPANT OPPORTUNITY

I am recruiting female Division 1 intercollegiate gymnasts to participate in a study exploring body image perceptions throughout their sport-related injury and rehabilitation process.

Must have sustained at least one musculoskeletal injury while training as an intercollegiate gymnast and returned to practice after injury was healed.

Concussions will NOT be included.

One short demographics questionnaire, and 3 online interviews (approx. 45-90min. each)

Participation is completely voluntary

If you fit this description and are interested in participating OR if you have any questions, please contact Morgan Miller at mill7140@mylaurier.ca.

LAURIER Inspiring Lives.

This study has been approved by Laurier REB (#6648)

Appendix B: Invitation to Participate

WILFRID LAURIER UNIVERSITY INVITATION TO PARTICIPATE

Exploring Body Image Through the Injury and Rehabilitation Process of Intercollegiate Female Gymnasts: A Multi-Case Study
Principal Investigator: Morgan Miller, Mkin Candidate
Supervisor: Dr. Jill Tracey, Associate Professor, REB #6648

You have been invited to participate in a research study that will explore an intercollegiate female gymnasts' experience surrounding body image perceptions throughout their injury and rehabilitation process. This project is being conducted by Morgan Miller, with the supervision of Dr. Jill Tracey, Associate Professor, and is a requirement of the Master's program in the Department of Kinesiology and Physical Education at Wilfrid Laurier University.

You have been identified as a potential participant due to your background and continued involvement as an intercollegiate gymnast. We recognize the challenges that come with injury as well as being involved in a demanding sport, so through your participation in this study we are hoping to gain a better understanding of your personal experience with injury and body image perceptions within the gymnastics context. As the researcher, it is my hope that your experience may be used to help gymnasts and educate support on how to help facilitate a positive rehabilitation process.

1 PARTICIPATION INVOLVMENT

Participants will be asked to complete:

- 1 short demographic questionnaire (approximately 15 minutes)
- 3 interviews (approximately 45-90minutes each)

Your participation in this study is strictly voluntary and you may choose not to participate, or to withdraw at any time without any penalty. Participation will be confidential, which means your name and school will not be shared and information can only be used with your consent. If you are interested in participating in the study, please respond to this email to proceed with consent and background questionnaire.

2 CONTACT

This project has been reviewed and approved by the University Research Ethics Board (REB #6648). If you have any questions regarding the study, you may contact the researchers. Thank you for your time and consideration of this study.

Sincerely,

Morgan Miller
Mkin Candidate
Wilfrid Laurier University
Kinesiology & PE, mill7140@mylaurier.ca

Dr. Jill Tracey
Associate Professor
Wilfrid Laurier University
Kinesiology & PE, jtracey@wlu.ca

Appendix C: Consent Form

WILFRID LAURIER UNIVERSITY INFORMED CONSENT STATEMENT

Exploring Body Image Through the Injury and Rehabilitation Process of Intercollegiate Female Gymnasts:
A Multi-Case Study
Principal Investigator: Morgan Miller, Mkin Candidate
Supervisor: Dr. Jill Tracey, Associate Professor
REB #6648

You are invited to participate in a research study exploring intercollegiate female gymnasts' experiences surrounding body image perceptions throughout their injury and rehabilitation process. This project is being conducted by Morgan Miller, with the supervision of Dr. Jill Tracey, Associate Professor in Kinesiology. The study is a requirement of the Master's program in the Department of Kinesiology and Physical Education at Wilfrid Laurier University.

3 INFORMATION

Gymnastics is a sport where body image disturbances and injuries are common and have been extensively studied as two separate entities. The purpose of the study is to investigate gymnasts' perception of body image throughout a major sport-related injury and rehabilitation process. Background and pre-injury insights of body image will be discussed retrospectively, as well as body image perceptions during the response to injury, rehabilitation and return to sport phases. You will be required to complete this consent form as well as the demographic information which should take about 15 minutes. Following this, you will be asked to participate in three separate guided 45-90 minutes semi structured interviews. The first interview will focus on background and experience as a gymnast before the injury including perception of body image. The second interview focus on the initial response to injury and the rehabilitation process with regard to body image. The third interview will focus on your return to sport and perception of body image.

You will be provided with an electronic copy of the transcript (you may request a hard copy if preferred) to check for accuracy and to clarify any of your comments. This will serve to verify that you have shared and expressed the information in the manner you had intended. We will ask you to review your transcript then return any questions, concerns or comments to us within two weeks of receiving the document. You may send your response to us by email, regular mail, or telephone. If we do not receive a response from you within two weeks of us sending you the document, we will assume that you do not have any questions and are satisfied with the transcript as it is written.

4 RISKS AND BENEFITS

Participant experiences may be used to help other gymnasts understand their injury experience in regard to body image and provide relatable material. You may also benefit through the reflection and discussion of your injury experience. This reflection and discussion can provide an opportunity for you to understand the positives and negative aspects of your injury and body image perceptions. The findings of the study can be used in an applied setting in the development of intervention strategies for body image, leading to a more comprehensive and individualized rehabilitation program. This study will also benefit the research community because it contributes to the growing knowledge about psychological responses to a sport related injury.

You will be discussing potentially sensitive topics regarding your body image and injury which could lead to potential discomfort. You will be revealing personal information regarding your demographics, as well as your struggles and triumphs throughout the course of exploring your experience. Feelings of distress or a rise of negative emotion may occur when reliving the injury process. Boredom may also occur since the interviews may last between 45 and 90 minutes. If, during or after the process, you feel that you would like to contact a mental health professional please go to Mental Health America or contact 1-800-273-TALK (8255) to reach a 24-hour crisis center where they can direct you to achieve the help you need.

In order to maximize the benefits and minimize the risks associated with participation numerous steps will be taken. To mitigate the presentation of personal information, your experiences will be kept confidential, and your interview data will not be stored with your name or presented with any identifiers attached. In order to protect against any discomfort, you will be told before the interview that you are free to stop the interview, or to take pause at any point. Also, there will be questions built into the interview to check in to guarantee your comfort level throughout the research process.

5 CONFIDENTIALITY

All information submitted by you will be confidential. Interviews will be audio recorded and transcribed verbatim. At this point any factors leading to direct information will be removed from the documents and be replaced with a code. Therefore, you will remain unidentifiable. Only myself and my supervisor will retain the list that links your code name with your actual name. All typed documents and contact information will be password protected on a secure computer, and all paper copies of participant information and interviews will be stored in a locked filing cabinet. Only myself and my supervisor will have access to the audio of your interviews, which will also be stored in a locked cabinet and then destroyed upon successful defense of the thesis project.

6 RIGHT TO WITHDRAW AND/OR OMIT SPECIFIC DETAILS:

During any point of this process you may withdraw from the study without any prejudice or negative repercussions. If you decide to withdraw from this study all your data which has been collected will be given to you or securely destroyed. You are not required to answer any questions that make you feel uncomfortable or you do not wish to answer. Following the

interview, you will be sent the interview transcripts electronically (you may request a hard copy), at which point you are able to clarify, amend, or omit any information or quotations you do not want used during this study. I thank you in advance for your participation in this study.

7 RESULTS OF THE STUDY:

Participants will be able to choose to receive an email containing a summary of the results of the study. **If you would like to be informed of the results of the study, check the box below.**

☐

8 CONTACT

If you have questions at any time about the study or the procedures or you experience adverse effects as a result of participating in this study you may contact the researcher, Morgan Miller, at mill7140@mylaurier.ca or 519-980-7851 or Dr. Jill Tracey at jtracey@wlu.ca.

This project has been reviewed and approved by the University Research Ethics Board (REB #6648), which receives funding from the Research Support Fund. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Jayne Kalmar, Chair, University Research Ethics Board, Wilfrid Laurier University, (519) 884-0170, extension 3131 or REBChair@wlu.ca.

9 FEEDBACK AND PUBLICATION

The results of this research may be published/presented in a thesis, course project report, book, journal article, conference presentation, or class presentation.

10 CONSENT

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

☐ Direct quotations using pseudonyms and all identifiers removed may be used in presentations or final write-up of this research study. Please check the box if you accept your quotations to be used.

It is advised that you print or save this consent form and/or record the researcher contact information in the case that you have any questions or concerns.

Appendix D: Demographics Questionnaire

Thank you for taking the time to participate in this study. The following questionnaire is designed to identify and explore your background, information related being an intercollegiate female gymnast and your injury. All provided information will be kept confidential and you will not be personally identified in the research reports. Please answer as accurately as possible.

Age:_____

Current Year in school (e.g., 1,2,3,4, other):_____

Are you a walk-on gymnast or on scholarship?_____

Conference Name and Ranking from the previous season:_____

Total Number of Years as a competitive Gymnast?_____

Did you participate in any other sports growing up?_____

Describe your injury while participating in intercollegiate gymnastics:

_____

How did this occur?

_____

_____

When did this occur?_____

What is the injury?_____

___

How much time did you have to take off of training and competing due to this injury?

_____

Please list your history of all injuries and when they occurred:
If you have no history of injuries, simply leave the following chart blank.
If you have had at least one injury in the past, please specify the year, type, and length.

Year of Injury	Type of Injury (e.g., sprained ankle)	Rehabilitation Time (e.g., 4 months, 2 weeks)

Did you keep a journal, draw pictures or send emails expressing any thoughts and/or feelings regarding your injury at any point throughout your injury and rehabilitation experience?

Please circle one: Yes/No

If yes, have you referred to them?

Please circle one: Yes/ No

If yes, when is the last time you read/referred to them and roughly how often do you refer to them?

_____

Appendix E: Interview Guides

Thank you for willing to speak to discuss your experiences with injury and body image as an intercollegiate female gymnast. I appreciate your willingness to participate and the time you have taken to do so. I want to remind you that your participation is voluntary, and you may refuse to answer any question or stop the interview at any point if you feel the need to do so. There are no right or wrong answers as I am interested in your thoughts, feelings and experiences. Feel free to ask me anything at any time during the interview and please take your time answering the questions.

The interview will be audiotapes so I am able to go over the data again at a later time. Before we get started, do you have any questions for me? (pause). May I turn on the audio recorder? (wait for affirmative and then proceed).

<u>Interview 1:</u>

1. How did you become involved in gymnastics?
    a. Are there any particular early experiences that have influenced your gymnastics career?
2. Why did you choose to become an intercollegiate gymnast?
        a. What are the perceived benefits?
        b. Which of these benefits factored into your decision to become an intercollegiate gymnast?
        c. What are the perceived risks?
        d. Which of these risks, if any, did you consider as deterrents in your decision to become an intercollegiate gymnast?
3. Tell me about your intercollegiate gymnastics experience up to this point?

a. How did you get recruited?

b. How many schools did you visit before deciding which one was right for you?

c. What was the deciding factor?

4. How did you feel when you were recruited to a Division I gymnastics program?
5. How would you describe your performance in training and competition?
    a. How many hours would you say are you training per week, including time in the gym and outside conditioning?
    b. How would you describe your interactions with your teammates? Your coach(es)?
    c. What support systems are present?
    d. How do you socialize with your teammates outside of gymnastics (if at all)?
6. What role, if any, does body image play in the sport of gymnastics?
    a. Please expand
7. Within the gymnastics context, how would you describe the ideal "look"?
8. Lastly, what does body image mean to you?

<u>Interview 2:</u>

1. How, if at all, did your thoughts change throughout the rehabilitation process?
2. How, if at all, did these thoughts affect your overall health and well-being?
3. How, if at all, did your feelings change throughout the rehabilitation process
    a. How did these feelings affect your overall health and well-being?

4. Tell me about any behavioral changes that occurred as a result of the injury such as body checking, dieting?

    a. What are the possible reasons for these changes?

5. Describe how these changes persisted through the rehabilitation process?

a. How were these behaviours beneficial to your overall health and well-being?

b. How were these behaviours detrimental to your overall health and well-being?

6. Tell me about your rehabilitation process.

a. How long did this process take?

b. Were there any major setbacks?

Interview 3:

1. Tell me about your return to sport.

a. What were your thoughts after your first training sessions post-injury?

b. What were your feelings after your first training sessions post-injury?

c. How did your behaviors change after returning to sport, such as body checking, dieting?

2. How would you describe your current body image?

a. How does this align with your ideal body image?

b. How has gymnastics shaped your body image?

c. Are there any non-gymnastics factors/influences that have influenced your body image? If so, what are they?

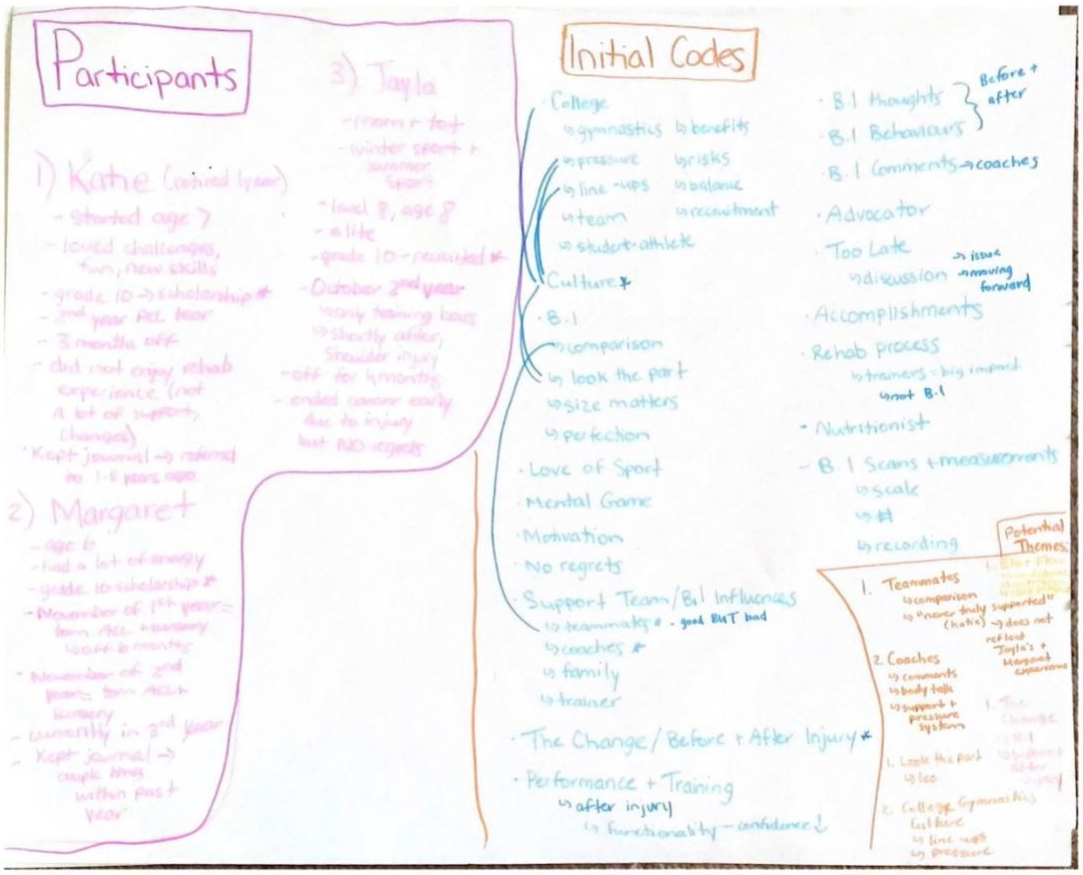
d. How, if at all, does your body image perceptions change depending on your environment?

3. How, if at all, has this affected your performance in training and/or competition?

a. Have these changes affected your interaction with others? If so, how?

4. How, if at all, do you think your body is perceived by others?

Appendix F: Visual Representation of the Data



Appendix G: Mind Map