

Phenomenological research on the motivation and self-directedness of recreational motocross athletes returning to the sport after significant injury

by

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B.S., Kansas State University, 2012
M.S., Pittsburg State University, 2020

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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Abstract

Participation in recreational extreme sports is on the rise, but with extreme sport participation comes significant injuries. Recreational extreme athletes endure a variety of significant injuries that hinder their normal function and sometimes cause permanent, life-altering trauma. Due to the individualistic and recreational nature of these extreme sports, the athletes involved do not participate for monetary reasons, career aspirations, or the pursuit of fame. It is unclear what motivation and self-directedness these athletes experience when returning to their recreational extreme sport after sustaining a significant injury. This study used a hermeneutic phenomenological framework to analyze the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross. Self-determination theory and self-directed learning theory guided the research. To maintain consistency in participant selection and phenomenon experienced, a part of the selection criteria is participation in recreational motocross. Participants had sustained a significant injury through their participation in the sport, and continued their participation once rehabilitated. Data were collected through two semi-structured interviews. This study included six participants. Data from interviews, researcher journaling, and analytic memos were analyzed for emerging patterns and themes using the hermeneutic phenomenological framework. Key findings of motivation and characteristics of self-directedness were found. Several themes emerged and included getting the most out of life, social forces to quit from outside the sport, friendship and camaraderie, feelings of accomplishment, special intrinsic sensation, desire to have fun, responsibility for injury and rehabilitation, sought information, fearful of reinjury, why do I want to keep doing this, and changing their strategies within the sport.

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Chapter 1 - Introduction

On October 31, 2003, while other 13-year-old children might have been finalizing their Halloween costumes or finding the perfect bag to take trick-or-treating that night, Bethany Hamilton was practicing her favorite activity, surfing, in her favorite surf spot. As she was lying on her board enjoying the smooth, calm sea, a shark attacked her without anyone noticing. The shark bit 16 inches out of her surfboard, along with her left arm just below the shoulder (Holmberg, 2009).

Bethany grew up in a family of avid surfers and began competing as a child. After the attack, most thought she would never surf again. Those expectations were quickly shattered, as one month later she returned to the ocean to surf again. As she was relearning to surf with only one arm, the surfing community and the public-at-large took notice. She received encouraging letters that motivated her to continue her participation. Before long Bethany was competing professionally, despite losing her arm and almost her life after the horrific encounter. Bethany recounted tears of joy as she paddled through the waves for the first time after her injury. Admitting she takes more precautions when surfing and the thought of another attack is constantly on her mind, she chooses to focus on having fun and enjoying the surf (Holmberg, 2009).

It is not surprising to learn Bethany had strong intrinsic motives to continue surfing. However, fan mail, a supportive surfing community, encouragement from the public, a tight-knit family who also surfs, and career aspirations are external factors that likely influenced her motives for returning to her favorite activity. What if Bethany was an adult with a career outside of surfing and performed the activity as a recreational hobby? What if Bethany did not possess the desire or the skill to enter professional competitions? What if she did not gain global

recognition and support from fans and others looking for a remarkably inspirational story? She may still possess intrinsic motives to return to her favorite activity, but would she successfully reintegrate herself into the sport? Would her journey from injury to returning to surfing have altered? To better understand motivation and self-directedness in recreational extreme athlete's during their injury rehabilitation was the driving force behind this study's development.

Background

Extreme sport participation has grown exponentially across the United States over recent decades and does not show signs of slowing down (Laver et al., 2017). Heggie and Caine (2012) described extreme sports as “individualistic sports containing structural components of real or perceived danger. These activities often involve speed, height, a high level of physical exertion, and highly specialized gear or spectacular stunts” (p. 1). Some examples of extreme sports are skydiving; buildings, antennae, spans, and earth (BASE) jumping; surfing; off-road and mountain bicycling; motocross; skateboarding; skiing; snowboarding; overnight backpacking; canoeing; hiking; and different forms of kayaking. In 2011, over 7.1 million people participated in mountain biking, 10.4 million in kayaking, 10.5 million people canoeing, and 8.4 million in backpacking (Heggie & Caine, 2012).

Injury Prevalence in Extreme Sports

Extreme sports injury mechanisms are less understood compared to those in traditional sports (Laver et al., 2017). One reason is due to inconsistency in injury definitions used in research (Heggie & Caine, 2012). Often injuries sustained during participation in extreme sports do not get reported to medical personnel, making prevalence difficult to track. Injury prevalence is difficult to actualize and sometimes misreported due to the variance of definitions of injury the researcher or data tracker is referencing (Heggie & Caine, 2012). More clear research on injury

prevalence is found when analyzing a single extreme sport rather than by grouping multiple extreme sports. Since several differing activities are considered extreme sports, the experience of sustaining a significant injury and returning to the activity may have considerable distinctions depending on the extreme sport. To maintain consistency across the phenomenon and data analysis this research focused on the recreational extreme sport of motocross (off-road motorcycling).

The sport of motocross comes with inherent risks, as Fierro et al. (2019) stated “Motocross races have one of the highest incidences of injuries compared with other sports” (p. 405). Heggie and Caine (2012) stated, “Simulated models show motocross riders spending 87-97% of their riding time above 90% of the maximum heart rate. Sporting events at advanced levels require complex jumps and turns with vehicle heights reaching up to ten meters above the ground” (p. 160). In 2006, all-terrain vehicles (ATV), motocross, and moped-related injuries were estimated to be over 275,000, with over 30,000 hospital admissions or deaths. Heggie and Caine (2012) substantiated this in their research reporting injury rates by adults in competitive motocross range “from 2.7 to 29.2 per 1,000 hours of riding. This represents up to 4.5 injuries per race” (p. 161). Actual injury prevalence may be higher, as this result represents injuries reported during sanctioned races. Some injuries may not be documented during a race. Motocross riders often spend more time participating in their sport in a non-sanctioned event, such as practice sessions where motocross injuries have a higher prevalence rate compared to sanctioned competitions (Heggie & Caine, 2012). The previous results do not account for injuries sustained outside of competition.

Using data from the National Trauma Databank between the years 2007-2014, Fierro et al. (2019) found 31,252 cases of reported injury from the sport of motocross. They identified

“extremity fractures” (p. 406), head injuries, and chest injuries to be the most common injuries sustained by motocross participants. Chest injuries were more commonly classified as “severe” (p. 406) while injuries to the extremities and head trauma represented the most common anatomical sites of injury. Helmets and protective gear are typically mandated in sanctioned competitions. The authors assumed their demographic included participants in sanctioned and non-sanctioned events as some injured participants reported not wearing a helmet or other protective gear. Heggie and Caine (2012), Laver et al. (2017), and Fierro et al. (2019) represent the most recent research on extreme sport and motocross injury epidemiology.

Current Injury Rehabilitation Research

Doctors, surgeons, and physical therapists continue to publish research focused on the physical aspect of functionality when returning to high-level activities after significant injuries (Neumann et al., 2010). However, these ailments are not the only ones to influence recreational extreme athletes returning to their extreme sport after a significant injury. Physical challenges, psychological readiness, and financial hardships are important issues to address.

Physical Challenges to Rehabilitation

Several factors may determine the success of rehabilitation and the ability to return to a sport after significant injury. It is difficult to provide an objective measurement of general timeframes between injury and return to sport after a significant injury because return to sport criteria is dependent on what tissue is injured, severity of injury, sport of pursuit, and treatment options (Ardern et al., 2016). However, Lum and Park (2019) analyzed the timeframe from injury and return to activity in recreational rock climbers after injury. They found patients’ sustaining multiple injuries is common, as 432 injuries were recorded among 237 patients. Of the 237 patients, 22% were unable to return to their recreational sport. Although 87% of the 237

patients did not require surgery, this population made up 83% of those unable to return to recreational rock climbing. Subsequent injuries during the rehabilitation process are factors that may negate injured individuals from returning to a recreational sport.

Reinjury is a common concern among healthcare professionals involved in the physical rehabilitation process. Not only is the previously injured site still fragile and susceptible to further damage, but subsequent injuries among adjacent or contralateral tissue is concerning. While researching Australian football players who encountered an injury during the competition season which required medical attention, Stares et al. (2019) found 75% of all subsequent injuries resulted in injuries to a different site and were of different nature than the original injury. This evidence suggests while athletes are rehabilitating an injury, they are at-risk of exacerbating the existing injury as well as compromising assumed healthy surrounding tissue. Considering risk of all forms of reinjury, risk significantly drops after one week of reintegration to competition (Stares et al., 2019). However, risk of reinjury remains elevated compared to non-injured athletes for at least 12 weeks (Stares et al., 2019).

Psychological Readiness

Rehabilitation from a significant injury can be a long and complicated process, but successful rehabilitation may require focused attention to more than just physical healing efforts. Research into the mental and emotional aspects of returning to sport after an injury has been performed but focuses on traditional sports (Chan et al., 2011). Athletes of traditional team sports at the high school, college, and professional level show extrinsic needs and support from teammates, coaches, and fans to successfully return to their sport (Burland et al., 2018; Hildingsson et al., 2018). Athletes often struggle with the mental aspect of the return to their sport more than the physical demands (Podlog & Eklund, 2006). Although athletes recovering

from a significant injury feel mentally strong once they sense they have completed the physical rehabilitation process, there is a heavy reliance on social support from teammates and coaches before any acknowledgment of mental readiness and comfort to return to play by the athlete (Burland et al, 2018; Hildingsson et al., 2018; Podlog & Eklund, 2006). Athletes with low social support miss more time participating in their sport due to injury, as well as suffering more injuries (Maddison & Prapavessis, 2005).

While athletes may show physical readiness to return to their sport, a fear of reinjury can hinder their psychological readiness, negatively affecting their success of reintegration (Ardern et al., 2015). After sustaining an injury, it is expected for an athlete to feel grief and emotional distress, with frustration, depression, and anger being the most common emotions reported (Crossman, 1997). Anxiousness and fatigue are also typical of severely injured athletes, noting increasingly traumatic responses as the severity of injury increases (Crossman, 1997). An athlete's psychological state and fear of reinjury can be detrimental enough to keep physically healthy athletes from returning to their sport (Kvist et al., 2005) or increase chances of reinjury after reintegration (Maddison & Prapavessis, 2005).

Often, extreme athletes do not formally compete against others (Laver et al., 2017). For some, there are no sanctioned organizations hosting events for them to obtain external rewards or recognition. Other recreational extreme athletes participate in their activity at a recreational level but choose not to compete. Because these athletes are typically involved in individual sports, they lack the intimate social structure of teammates and coaches that is important for traditional athletes when returning to sport after a significant injury (Burland et al, 2018; Hildingsson et al, 2018; Podlog & Eklund, 2006). Without the typical social support of traditional sports,

recreational extreme athletes may utilize unknown or unique motives to overcome barriers when returning to a high-risk activity after a significant injury.

Avoiding risky behavior is normal, and the willingness to seek activities or behaviors of high risk are unhealthy practices (Willig, 2008). Such behaviors may be due to potential pathologies since it is assumed physical safety is in tune with mental equilibrium (Willig, 2008). This belief suggests recreational extreme athletes continue to pursue dangerous activities without the full understanding of the physical risk they are taking, albeit after sustaining a significant injury. Conversely, the thrill of extreme sports felt by its athletes releases a unique experience and emotion that cannot be duplicated outside of their extreme sport (Brymer & Schweitzer, 2013). Perhaps these athletes may be fully aware of the danger but are taking calculated risks while believing in prior experience and their developed skills to pursue an innate feeling that cannot be supplied without the threat of notable consequences (Buckley, 2018). Recreational extreme athletes seek thrill more than the average person (Barlow et al., 2015; Buckley, 2018; Guskowska & Boldak, 2010), as well as enjoy a sense of freedom when participating in novel risky behavior (Brymer & Schweitzer, 2013). However, it is unclear what motivates these recreational extreme athletes, what characteristics of self-directedness they possess, or what learning episodes they experienced to successfully return to an extreme sport as a recreational participant after sustaining a significant injury. The physical implications of rehabilitating a significant injury garner plenty of attention and psychological aspects are gaining considerations.

Financial Hardship

The majority of injuries that require hospitalization are likely to lead to financial hardship and affect more than physical abilities (Murphy et al., 2019; O'Neill et al., 2020). For instance, “trauma-related disorders rank among the top five most costly medical conditions in the United

States. A traumatic injury can cause an unexpected, dramatic change in circumstances for the individual, both physical and financial” (O’Neill et al., 2020, p. 1). The financial aspect of injury can involve medical bills and impact employment status. Most post-injury financial hardship comes from out-of-pocket health expenses, notably prescription drugs and inpatient expenses being the most common contributors (O’Neill et al., 2020).

Financial toxicity represents monetary measures, objective measures such as debt and bankruptcy, and subjective measures affecting quality of life such as depression, post-traumatic stress disorder (PTSD), and perception of financial burden due to injury (Murphy et al., 2019). Each year 2 million adults sustain an injury that results in hospitalization in America, with 90% of these injuries creating some form of financial toxicity (Murphy et al., 2019). An estimated 500,000 patients experience moderate to severe financial toxicity following a traumatic injury (Murphy et al., 2019). Decreased monthly income, loss of employment, perception of financial toxicity, PTSD, and depression were most noted. Health insurance status and living within a small versus large household were the highest predictors of financial toxicity (Murphy et al., 2019).

Significant physical injuries sustained during an extreme sport require a substantial rehabilitation process for a recreational extreme athlete to return to their extreme sport. Not only is the injured tissue susceptible to reinjury, but the athlete is at an increased risk of injuring assumed healthy tissue throughout the rehabilitation and return to sport process (Lum & Park, 2019; Stares et al., 2019). Psychological readiness is a significant factor to injury rehabilitation (Burland et al., 2018; Hildingsson et al, 2018; Podlog & Eklund, 2006). Social support has also shown to influence injury rehabilitation outcomes (Burland et al., 2018; Maddison &

Prapavessis, 2005). Finally, the financial hardship of medical bills and hospitalizations can create more adversity to the rehabilitation process (O'Neill et al., 2020).

Research Problem

Research has looked at extreme athletes and recreational extreme athletes in many ways, but the investigation needs to continue to uncover why recreational extreme athletes would return to such a sport after the hardships of a significant injury. Existing research on extreme sports focuses on thrill-seeking behavior and a sense of freedom that is felt by participants (Brymer & Schweitzer, 2013; Buckley, 2018; McNamee, 2018; Woodman et al., 2013).

Research on rehabilitating a physical injury is abundant in the medical field but focuses primarily on anatomical rehabilitation and functionality (Neumann et al, 2010). However, research has not looked at injured participants' motivation or if they pursue any learning on their own to return to the sport. The specific use of self-determination theory (SDT) and self-directed learning (SDL) features have yet to be considered in this population.

Research Purpose

The purpose of this phenomenological study was to explore the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross.

Research Question

This qualitative phenomenological inquiry was guided by the following research question:

RQ: What is the essence of self-directedness and motivation of recreational motocross athletes when they return to the sport after a significant injury?

Theoretical Framework

SDT and SDL theory were paired to form the theoretical framework for this research. SDT states motivation for any human action lies along a continuum of motivation with amotivation and intrinsic motivation on opposite ends of each other, and extrinsic motivation planted between them (Deci, 1975). This continuum of motivation along with understanding the basis of each phase of the continuum helped inform the research question and guided the analysis of results. Examining the participants experience through the lens of the SDT aided in determining the sources of motivation along with gauging levels of innate psychological needs (i.e., autonomy, competence, and relatedness) as defined by Deci (1975) that are necessary to internalize motivation.

This research also aimed to analyze characteristics of self-directedness in recreational extreme athletes as they returned to an extreme sport after a significant injury. Learner responsibility, reflection, self-evaluation, autonomy, and intrinsic motivation were consistently shown among individuals with substantial levels of self-directedness (Candy, 1991; Gugliemino, 1977; Knowles, 1975). The theory of SDL helped provide a foundation and guided the analysis of each participant's demonstrated level of self-directedness throughout the researched learning episode.

Self-Determination Theory

SDT provided initial tenets to build its framework of motivation. One tenet was that human behavioral motivation for any action fell along a continuum between amotivation, extrinsic motivation, and intrinsic motivation (Deci & Ryan, 1985). Next, behaviors performed with higher levels of intrinsic motivation led to more enjoyment and inherent satisfaction (Deci, 1975; Ryan & Deci, 2000a). Finally, all humans are born with innate psychological needs that

require fulfillment to promote growth and development of intrinsic motivation (Cherry, 2021; Deci & Ryan, 1985). The three psychological needs requiring fulfillment to build intrinsic motivation are autonomy, competence, and relatedness (Deci, 1985).

Of the three basic psychological needs requiring fulfillment to develop intrinsic motivation, autonomy provides the strongest tie to internalizing motivation. Motivational research correlated autonomy with a sense of control over one's behavior (Ryan & Connell, 1989). Extrinsic motives for behavior are less likely to fulfill a desire for autonomy since the behavior is predicated on authoritative demands or external rewards such as prizes, money, or status rather than being self-selected. Actions performed solely based on personal values, interests, and enjoyment are examples of purely autonomous behavior and autonomous behavior led to an increased likelihood of dedication, satisfaction, and joy (Deci & Ryan, 1985; Ryan & Deci, 2000a).

A sharp sense of competence may lead to higher levels of perseverance and behavioral sustainability. SDL referred to competence as one's perception of their ability to succeed in a task or learning episode (Spinath & Steinmayr, 2012). Competence is one of the basic psychological needs for intrinsic motivation because of an innate desire to feel effective (Deci & Ryan, 2000). As one feels more capable to positively affect their environment (personal, social, or occupational) an intrinsic desire to succeed can develop. However, competence requires success to be challenging. Completion of mundane work and routine tasks does not harbor competence compared to the successful completion of comparative labor.

Feeling connected to one's contextual environment can help build intrinsic motives (Ryan & Deci, 2000a). The internal need for relatedness is likely to be more fulfilled when an individual believes their behavior enhances their connection to a desired community (Kajfez &

Matusovich, 2017). Building trust between peers, coworkers, family, or teammates is crucial to developing the desired relatedness (Ryan & Deci, 2000b). Sustaining relationships and building trust within relationships are likely to lead to fulfilling the innate desire for relatedness. While mistrust can lead to feelings of being controlled by external factors, effective communication and team building have been shown to enhance intrinsic motivation by fostering a sense of belonging between peers (Baumeister & Leary, 1995).

Self-directed Learning

A commonplace definition of SDL within adult education is necessary to understand its characteristics. Researchers have emphasized altering aspects of SDL when analyzing its application, but Malcolm Knowles provided a definition often referenced by other researchers as the basis of SDL (Candy, 1991; Guglielmino & Guglielmino, 2001). Knowles (1975) specifically defined the theory:

SDL describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (p. 18)

This definition suggests self-directed learners are capable self-managers, resourceful, and pointed in their learning goals. Guglielmino (1977) and Candy (1991) acknowledge Knowles's (1975) definition of SDL and expanded the research to identify precise characteristics of self-directed learners. What was found is that high levels of autonomy and determination were common behaviors of self-directed learners with numerous characteristics defining these behaviors (Candy, 1991; Guglielmino, 1977).

Autonomous behavioral characteristics such as self-confidence and possessing the desire to learn were central to strong self-directed learners (Guglielmino, 1977). Guglielmino's (1997) findings of what constitutes a strong self-directed learner had similar themes to Candy's (1991) defining traits of autonomy. Although they may utilize peers or professionals to facilitate their learning, initiative, independence, and decision-making based on intrinsic desires were common qualities among strong self-directed learners. These characteristics lent themselves to learners being capable self-managers and sustaining motivation throughout the learning episode.

A strong sense of determination is evident in self-directed learners and these learners approach difficulties with a unique perspective. Self-directed learners are not deterred by challenges. They acknowledge responsibility for their success and view difficulties as a learning opportunity instead of a setback (Guglielmino, 1977). They embrace obstacles. This assumed responsibility coupled with determination allowed self-directed learners to exhibit more discipline than other learners (Candy, 1991; Guglielmino, 1977). Tenacity and purposeful actions increase the likelihood of learning despite difficulties. Difficulties can open self-directed learners to new perspectives that encourage innovative methods of problem-solving and learning (Gibbons et al., 1980).

This research combined the SDT and SDL to establish its theoretical framework. The continuum of self-determination and knowledge of intrinsic motivation, along with characteristics of self-directedness guided the analysis of each participant's experience to best answer the research question.

Research Design

The research design for this study was a phenomenological inquiry. Phenomenology seeks to determine how knowledge and meaning are constructed within a specific lived

experience (Horrigan-Kelly et al., 2016). Phenomenology states the world (object), and human (subject) should not be analyzed to stand alone from each other, but both are inseparable when searching for meaning (Morrow et al., 2015; Moustakas, 1994). However, multiple individuals may be exposed to the same object or experience but yield a unique understanding of its significance (Crotty, 2015). In this research, the participants had experienced a significant injury from their participation in the recreational extreme sport of motocross. As a human is conscious of an object (in this case a phenomenon) and able to recount their consciousness of the object to the researcher, the researcher can highlight areas of the description that are essential to the object. This data is then analyzed to identify emergent themes (Giorgi, 2012; Morrow et al., 2015).

Participants

As injury significance and prevalence vary between extreme sports (Heggie & Caine, 2012) the rehabilitation process of participants across extreme sports may be unique to that sport. To maintain consistency, participants for this research included recreational participants involved in the extreme sport of motocross. Participants were required to have sustained a significant injury while participating in recreational motocross and continued their participation in the sport once rehabilitated. Examples of such injuries include, but are not limited to, spinal cord injuries, fractured bones, ligament and tendon tears, muscle strains, and concussions that may or may not require surgical fixation and limit the participants function of basic activities of daily living. Participants were recruited at local motocross races and events, outreach on social media, and snowballing. As a current recreational participant in motocross, I utilized existing relationships and local motocross facilities to recruit participants.

Data Collection and Analysis

I conducted semi-structured interviews and follow-up interviews reflecting an in-depth open-ended interview style (Appendix A). Bhattacharya (2017) explained in-depth open-ended interviews are best practiced when performing a deep analysis of a subject's experiences while preparing key questions to guide the direction of the interview. Follow-up interviews allowed me and the participants the ability to reflect on initial questions and descriptions, then validate and expand on the analysis (Holter et al, 2019).

As the researcher, I performed reflective journaling throughout the entirety of the research process. Phenomenological research requires the researcher to not speculate or make assumptions based on personal knowledge or experiences (Moustakas, 1994). Reflective journaling allowed me to record my thoughts and feelings throughout the data collection and analysis process. This method of data collection helped me identify personal assumptions and subjectivities to differentiate data and maintain rigor during the data analysis process (Russell & Kelly, 2002).

As this research aimed to understand participants' descriptions to answer the research question, an inductive analysis approach was best to analyze the data. Bhattacharya (2017) explained inductive analysis to be "working 'up' from the data" (p. 150). This concept refers to the researcher not beginning the research with expectations of testable results. Instead, inductive analysis allows the researcher to investigate clusters of comparable data and emergent themes across varying categories.

Research Limitations and Delimitations

A phenomenological design requires participants and the researcher to analyze the past. This retrospective approach may lend itself to misinterpretations and miscommunications as the

participants attempt to report lived experiences along with the attitudes and emotions felt at that time. Emotions during the rehabilitation of a significant injury may be altered compared to a subject's attitude towards that lived experience years later once they have shown to survive and continue their participation in an extreme sport with a sense of normalcy.

Phenomenology requires a deep analysis of each participant. This qualitative research aimed to uncover specific motives and characteristics of SDL. An in-depth investigation required exhausting resources and detailing results, limiting the number of participants able to be involved.

One delimitation to this study included narrowing the sample to those involved in recreational motocross. Other recreational extreme sports were not included, hindering this study's transferability. This study was delimited to only male participants. Female recreational motocross riders were recruited, but none volunteered to participate. Convenient sampling was utilized to a local group. This practice also limited the reach of the participants.

Significance of the Study

As participation in recreational extreme sports continues to rise (Heggie & Caine, 2012; Laver et al., 2017), significant injuries within these extreme sports are likely to persist. Researching recreational extreme athletes returning to an extreme sport after a significant injury may develop a deeper understanding of this phenomenon. Identifying motivation and potential characteristics of SDL within these recreational extreme athletes can better inform future research on this population. A deeper understanding of this phenomenon and these participants may lend itself to improved rehabilitation outcomes for future recreational extreme athletes who sustain a significant injury. The findings of this study may cause modification of current injury rehabilitation strategies approaches to patient education to enhance injury rehabilitation

outcomes for the general public. SDT and SDL have yet to be applied to this phenomenon or population. Utilization of SDT and SDL as this study's theoretical frameworks aimed to progress research within their respective domains.

Operational Definitions

Autonomy- “A sense of initiative and ownership in one's actions. It is supported by experiences of interest and value and undermined by experiences of being externally controlled, whether by rewards or punishments” (Ryan & Deci, 2020, p. 1).

Competence – “The feeling of mastery, a sense that one can succeed and grow. The need for competence is best satisfied within well-structured environments that afford optimal challenges, positive feedback, and opportunities for growth” (Ryan & Deci, 2020, p. 1).

Extreme sports – “Individualistic sports containing structural components of real or perceived danger. These activities often involve speed, height, a high level of physical exertion, and highly specialized gear or spectacular stunts” (Heggie & Caine, 2012, p. 1). Laver et al. (2019) included an element of danger or stunts that increase physical risk in their definition of extreme sports.

Extreme athletes – Those who partake in the defined extreme sports.

Extrinsic motivation – “Behaviors done for reasons other than their inherent satisfactions” (Ryan & Deci, 2020, p.2).

Intrinsic motivation – “Intrinsic motivation is defined as the doing of an activity for its inherent satisfaction rather than for some separable consequence. When intrinsically motivated a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards” (Ryan & Deci, 2000a, p. 56).

Relatedness – “A sense of belonging and connection. It is facilitated by conveyance of respect and caring” (Ryan & Deci, 2020, p.1).

Self-determination Theory Continuum – SDT’s taxonomy of motivation which explains motivation to lie along a continuum ranging from amotivation, extrinsic motivation, and intrinsic motivation. Along each form of motivation lies specific attributes, perceived locus of causality, and regulation of internalization to help characterize the continuum (Ryan & Deci, 2020).

Self-directed Learning – “A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (Knowles, 1975, p.18).

Significant Injury - Edeling et al. (2013) explained the criteria of a significant injury requires evidence signifying the injury to result in “significant life-changing sequelae” (p. 4). The authors also wrote the character of permanent disability and amount of “limitations, restrictions and subjective suffering” (p. 4) should be considered. Examples of such injuries include, but are not limited to, spinal cord injuries, fractured bones, ligament and tendon tears, muscle strains, and concussions that may or may not require surgical fixation and limit the participants function of basic activities of daily living.

Chapter Summary

Motivation and characteristics of self-directedness of a recreational extreme athletes shown throughout their injury rehabilitation has thus far been unexplored in research. These athletes do not gain financial incentives, nor do they typically have teammates and coaches to lean on in times of difficulty when seeking support (Burland et al, 2018; Hildingsson et al, 2018;

Podlog & Eklund, 2006). This research used a phenomenological approach that allows participants to recount their experience of a significant injury and re-entry into the activity of its source. A semi-structured, in-depth open-ended interview style was applied to perform a deep analysis of the participants' experiences (Bhattacharya, 2017). Approaching this research with inductive analysis allowed me to investigate for clusters of comparable data and emergent themes related to motivation and characteristics of SDL. Insight into these results may help future adult education research analyze human reactions, motivational patterns, and characteristics of SDL. In close relation to this topic of research, I brought familiarity with lived experiences. This background allowed me an ability to relate to the participants and research, though I was conscious of the idea that the results may expose me along with personal beliefs and ideals.

Chapter 2 - Literature Review

Extreme sport participation is on the rise, and with that rise in participation comes a rise in significant injuries (Heggie & Caine, 2012; Laver et al., 2017). Despite intense pain and temporary loss of function, or sometimes permanent damage to the body, many recreational athletes continue their participation in extreme sports once their injuries have healed. They experience a rare phenomenon that may require an uncommon learning process to successfully return to an extreme sport. The literature review explores the topics of self-determination theory and self-directed learning, as well as their application to extreme sports.

SDT provided the framework of motivation. The literature review identifies the differences between intrinsic motivation, extrinsic motivation, and amotivation. An overview of SDT research regarding recreational athletes and extreme athletes' motivation and behavior is given. Characteristics of SDL along with similar characteristics often seen in those rehabilitating an injury are highlighted. Such characteristics may factor into a recreational motocross participants' psychological readiness to return to their extreme sport after sustaining a significant injury.

Self-determination Theory

SDT was developed by Deci and Ryan (1985) as a theory of human motivation. How motivation is categorized within SDT is what makes this motivational theory unique. Rather than identifying the amount of motivation one may have toward a specific behavior or action, SDT emphasizes the reasoning behind the motivation (Deci & Ryan, 1985; Ryan & Deci, 2000a). SDT states motivation is generated from either intrinsic or extrinsic influences (Deci & Ryan, 1985). Extrinsic motivation describes external factors that control behavior versus intrinsic motivation which had an autonomous origin. However, motivation is not labeled strictly intrinsic

or extrinsic. SDT uses a continuum to decipher motivation (Deci & Ryan, 1985; Ryan & Deci, 2000a). One end of the continuum lies amotivation, at the opposite end lies intrinsic motivation, with extrinsic motivation and its regulatory factors between them.

Actions performed through higher levels of intrinsic motivation have the potential to supply more internal satisfaction (Ryan & Deci, 2000a); therefore, facilitating intrinsic motivation can promote overall well-being (Hagger & Chatzisarantis, 2007; Ryan & Deci, 2000a). Proper facilitation of such motivation requires fulfilling three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 1985; Ryan & Deci, 2000a).

Intrinsic Motivation

There are many definitions of intrinsic motivation. This research used the following definition of intrinsic motivation:

Intrinsic motivation is defined as the doing of an activity for its inherent satisfaction rather than for some separable consequence. When intrinsically motivated a person is moved to act for the fun or challenge entailed rather than because of external prods, pressures, or rewards. (Ryan & Deci, 2000a, p. 56)

When the results of behavior do not hold any regulation and behavior is done for the pure enjoyment of its performance, motivation is entirely regulated by intrinsic values (Deci, 1971; Ryan & Deci, 2017). The outside perception of its action does not influence these behaviors, nor do tangible results. Fulfilling internal curiosity, acting for the fun, or overcoming a challenge without expectations of external pressures or rewards are intrinsic motivators (Deci, 1975). Such behaviors are commonly performed as hobbies. These hobbies include a recreational activity that bears no change in status, financial compensation, or outside perception of self, yet are

performed for the belief of improving a personal sense of happiness, enjoyment, and quality of life.

SDT claims fulfilling certain psychological needs is necessary to develop intrinsic motivation. These psychological needs are innate, but not every individual requires the same levels of each need to act through intrinsic motivation (Ryan & Deci, 2000a). The three psychological needs are autonomy, relatedness, and competence (Deci & Ryan 1985, Hagger & Chatzisarantis, 2007).

Autonomy

Of the three psychological needs highlighted within SDT, autonomy was the best predictor of self-regulation and internal motivation (Ryan & Deci, 2017). Autonomy represented a sense of control, or an internal locus of causality over one's actions and behavior (Ryan & Connell, 1989). Actions performed with complete autonomy were aligned with personal values, interests, and enjoyment (Deci & Ryan, 1985, Ryan & Deci, 2000b). Participating in an activity for internal satisfaction, learning, or growth were signs of autonomous behavior. Being able to build a locus of causality and personal enjoyment improved the chances of sustained behavioral change through advancing intrinsic motivation (Moustaka, 2012). Any behavior or action performed to gain a form of tangible rewards such as money, prizes, or status was not completed with pure autonomy, and motive was considered more extrinsically based. In this instance, the sense of self was "not synonymous with person" (Ryan & Deci, 2017, p. 11). The motives for such behavior or action were not entirely influenced by internal fulfillment. Such extrinsic motives had the potential to undermine autonomy, potentially harming natural satisfaction and decreasing overall intrinsic motivation (Ryan et al., 2009).

Competence

Competence represented how one perceived their ability to successfully learn or perform (Spinath & Steinmayr, 2012) and the internal desire to feel effective (Deci & Ryan, 2000).

Competence was built from previous successes and positive feedback leading to a sense of self-efficacy (Bandura, 1997; Ryan & Deci, 2017). As one builds knowledge or gains mastery through practice and repetition, self-competence grows, enhancing one's psychological wellbeing and future chances of success in related attempts. SDT explains competence as a basic need to feel intrinsically enriched. Enhancing one's competence has shown to increase likelihood to take on new challenges for intrinsic pleasure (Rockmann & Ballinger, 2017). Malmberg and Martin (2019) found utilizing strategies to increase students' self-belief and competence led to enhanced effort exertion. Feeling confident in the ability to learn and perform helps satisfy internal desires and increases the chance of sustaining a behavior. Developing competence was considered crucial for creating an autonomous approach to activity and psychological fulfillment (Deci & Ryan, 1985; Ryan & Deci, 2000).

Relatedness

The internal need for relatedness represented one's desire to feel connected with one's contextual environment (Kajfez & Matusovich, 2017). Hagger and Chatzisarantis (2007) referred to relatedness as a "sense of belonging" (p. 3). This sense of belonging can be related to a variety of contexts. Educators may desire to feel connected to their students, as well as their colleagues. An athlete's ability to learn and build intrinsic motivation may be enhanced if the skill being practiced is seen as relatable to their team's performance or personal agenda. Relatability can be built in part by sustaining relations. Frequently changing social environments and those that make up the environment, such as partners, teammates, and colleagues, do not allow adequate

relations to be built. Feelings of trust in the surrounding environment, including peers, social circles, colleagues and leadership, can positively affect one's relatedness. Without a strong sense of relatedness, one was more likely to feel controlled by external causes, leading to less autonomy and hindering intrinsic motivation (Baumeister & Leary, 1995).

Extrinsic Motivation

Although one may not feel a strong sense of autonomy or perceived control over a certain action, behaviors are performed, and personal satisfaction can be present. Taking action to satisfy the needs of a family member, a friend, or a teammate are examples of extrinsic motives regulating behavior despite the personal investment (Deci et al., 2001; Deci & Ryan, 1985). "Chores, work, duties, rituals, and exercising self-restraint" (Ryan & Deci, 2017, p. 179) were other examples of human behavior that may bring a form of satisfaction but are not motivated by intrinsic fulfillment of the actions, themselves.

Within extrinsic motivation lie four different types of regulations: external regulation, introjected regulation, identified regulation, and integrated regulation (Ryan & Deci, 2000a). Humans can be coerced through rewards and punishment, and one may perform an action to gain monetary prizes or to avoid a penalty. People often acted through extrinsic motives due to external promotions or feelings of outside sources compelling them to enact a particular behavior (Deci & Ryan, 1985). SDT labeled these motives as external regulation (Ryan & Deci, 2017). Peer pressure and societal norms are forms of external regulators that can dictate behavior. One may feel ostracized when choosing to act against these controlling motives.

Introjected regulation referred to enacting a behavior to refrain from internal guilt (Gillison et al., 2009; Ryan & Deci, 2000b; Ryan & Deci, 2017). Practicing a skill so others do not look down on oneself is an example of introjected regulation. When one maintained a

behavior to enhance ego or pride despite not treasuring the action or results, motivation is labeled introjected regulation (Gillison et al., 2009).

It is possible for one to act because one identifies with the benefits of its outcomes. This form of motivation differs from pure external regulation. These behaviors were driven by perceived benefits that individuals deem essential to their sense of self (Ryan & Deci, 2017). Although a person may not have an intrinsic enjoyment of jogging, they may still choose to maintain a consistent jogging regimen due to its perceived health benefits. This identification with the results of behavior leads to the identified regulation of extrinsic motives.

Finally, integrated regulation was the most autonomous form of extrinsic motivation (Ryan & Deci, 2000b). These behaviors speak more to personal values and identity than other categories of extrinsic regulators. A common example is learning a new language to identify with a community. A language barrier between an individual and the surrounding community after moving to a foreign country may cause difficulty completing tasks of daily living and a poor sense of relatedness. A desire to identify and integrate oneself into the community may require one to learn a new language. One may not be learning a new language because of intrinsic enjoyment of the activity itself, but the result of the behavior is valuable to internal desires. The benefits received may help integrate personal values and fulfill a locus of control.

Humans often performed actions and assume behaviors for reasons outside of pure internal fulfillment (Deci et al., 2001). Society may dictate or expect specific behaviors to be practiced. A person's attaining tangible prizes or obeying orders to refrain from punishment may also dictate behavior. Sometimes, one's identifying with the results of an action drives behavior. A behavior may not elicit intrinsic joy, but the results align with personal values. Although driven through extrinsic motivation, such behavior may be performed with altering levels of

autonomy. The differing regulations of extrinsic motivation explain the potential to be motivated through external forces while having a sense of control and focus on internal desires (Ryan & Deci, 2000a).

Amotivation

SDT suggested most behavior regulation falls between various autonomous actions and controlled forms (Ryan & Deci, 2017). On the opposite end of intrinsic motivation lies the concept of amotivation. Amotivation referred to a complete lack of intentionality and motivation (Hagger & Chatzisarantis, 2007; Ryan & Deci, 2017). Sometimes amotivation leads to a complete absence of action due to a lack of belief in purpose or outcome. This was seen when one perceived they were without any control over outcomes or if they were incapable of acting (Ryan & Deci, 2000b). Poor control and competence may be noted in this form of amotivation. A lack of interest or perceived value to behavior was also qualified as amotivation, despite acknowledging adequate possession of skill to perform (Deci & Ryan, 1985). One may be capable of performing a skill, but if an action is not deemed to have any benefits one may choose to ignore the skill or behavior.

Rather than attempting to measure the quantity of motivation one has towards specific actions, SDT emphasized the origin of motivation toward behaviors (Deci & Ryan, 1985; Ryan & Deci, 2000b). The origin of any behavior or action one chooses to take lies along a continuum from amotivation to intrinsic motivation, with extrinsic motivation settled between the two. Fulfillment of innate psychological desires, such as autonomy, competence, and relatedness, tend to build intrinsic motivation toward an action. As innate desires are satisfied, one is likely to act through intrinsic motives. However, it is possible for one to act through extrinsic motives while intrinsically identifying with the results of the action. Extrinsic motivation may not always align

with pure innate desires, but these actions are still completed with varying levels of regulation. To better understand recreational extreme athletes who return to an extreme sport after sustaining a significant injury, it is essential to first explore current research on recreational activity and extreme athletes.

Self-determination Theory Research

Compared to professional and collegiate athletes, recreational athletes had different motives for participation in their chosen sport (Sheldon & Watson, 2011). Before attempting to understand the experiences of a recreational extreme athlete returning to an extreme sport after a significant injury, it is necessary to dissect how motivation aligns with recreational activities and what motivational patterns are expected from recreational athletes. Once a more global view of recreational activity and recreational athletes are noted, it is worthwhile to acknowledge existing research on extreme athletes.

Recreational Activity and Recreational Athletes

The benefits received from participating in recreational activity and the motivational patterns recreational athletes show toward their activity are common subthemes in research applications of SDT. Research into these avenues demonstrated validity to the concept of fulfilling the innate needs of autonomy, competence, and relatedness (Kang et al., 2019; Ryan et al., 2009). The origin of recreational athletes' motivation and their position on the self-determination continuum built the framework laid by Deci and Ryan (1985).

Benefits of Recreational Physical Activity

Enjoyment and intrinsic motivation are likely to influence what behavior and activities individuals partake in during their leisure time. The average American has roughly 35 to 40 hours of leisure time a week to fill, with more frequent but shorter blocks of leisure time coming

during the week compared to fewer but larger allotments during the weekend (Godbey, 2009). How this leisure time is spent affected overall wellness (Benzer et al., 1999; Eskiler & Ayhan, 2019; Okesanya & Ayoade, 2014). Increasing the quality and quantity of physical activity can offer obvious physical benefits, but recreational physical activity can provide more than physical advantages to an individual. For instance, Benzer et al. (1999) categorized overall wellness into six dimensions (physical, social, emotional, intellectual, psychological, and spiritual) and compared wellness scores to physical activity levels. Physical activity was measured through a questionnaire inquiring about physical activity performed at work, sport, and leisure time (excluding sport activities). Those who scored highest in overall wellness also showed more leisure time physical activity compared to more sedentary individuals.

Leisure benefits such as psychological, social, and physical adaptations can shape one's overall wellness (Eskiler & Ayhan, 2019). Eskiler and Ayhan (2019) analyzed leisure activity benefits and satisfaction of leisure time activity in extreme athletes. They found a strong indication that the benefits of leisure time activity were enhanced when the participants reported high levels of satisfaction from their chosen activity. They claimed leisure physical activity has shown to propel psychological benefits by offering people relief from life pressures, and emotional relaxation. Additionally, leisure physical activity has been shown to improve creative thinking and increase overall enjoyment of life. They also noted social benefits from gaining trust in others while also developing friendships. Leisure activities that fulfill personal needs promote overall wellness. The more satisfied people were in their leisure activity the more likely they were to receive these benefits (Eskiler & Ayhan, 2019).

To receive optimal benefit requires regular leisure physical activity, one must gradually increase frequency until it is part of one's regular routine (Okesanya & Ayoade, 2014). To form

a new leisure activity into a regular occurrence, it is important for one to identify activities they find fun and enjoyable (Okesanya & Ayoade, 2014; Rodrigues et al., 2020; Sarmiento & Marques, 2018). For those searching for new and enjoyable leisure activities that they can consistently maintain, the social aspect and benefit should not be overlooked. Fulfilling one's relatedness need through leisure activities enhanced frequency and enjoyment, allowing for more leisure benefits (Eskiler & Ayhan, 2019). Recreational participation can allow individuals to interact with others in a positive manner. Recreational activity participants who share such experiences enhanced mental capacity and emotional stability (Okesanya & Ayoade, 2014).

Overall wellness has been shown to enhance with regular leisure time physical activity through psychological, social, and physical adaptations (Benzer et al., 1999; Eskiler & Ayhan, 2019; Okesanya & Ayoade, 2014). When one understands their intrinsic desires and motivation, they are more likely to identify activities that can be sustained and grow into a regular occurrence. To understand recreational athletes desires requires recognition of existing research regarding recreational physical activity participants and their motivational patterns.

Motivational Patterns of Recreational Athletes

SDT stated the three innate psychological needs of autonomy, competence, and relatedness need to be fulfilled to facilitate intrinsic motivation, and intrinsic motivation was necessary to enhance well-being (Deci & Ryan, 1985; Ryan & Deci, 2000b). Activities that are intrinsically versus extrinsically motivated affected the likelihood that one completes a given task (Ryan et al., 2009; Tsorbatzoudis et al., 2006). Participation in recreational physical activity shares a similar distinction. Although recreational activity is typically performed for one's own enjoyment and according to one's own schedule, the three innate psychological needs still require fostering to promote fulfillment.

One may show levels of intrinsic motivation to perform a single bout of physical activity, but to sustain consistency in that behavior may require further internalization. Tsorbatzoudis et al. (2006) identified adults currently participating in recreational sports and used quantitative scales to measure participants sport motivation and intention. Their research suggested that increased motivation led to increased sport participation, and specifically, intrinsically motivated participants increased likelihood of continued participation in their recreational sport (Tsorbatzoudis et al., 2006). However, increasing motivation and participation requires adherence to psychological fulfillment. Activities that fulfill an athlete's basic need of autonomy, competence, and relatedness held more power over exercise adherence for recreational sport participants than exercise intention (Kang et al., 2019). This means one may have a goal of committing to a behavior, but they are not as likely to sustain that behavior without adhering to their needs of autonomy, competence, and relatedness.

Individuals may differ in the amount of autonomy, competence, and relatedness required to feel fulfilled, so tailoring intervention and motivational tactics to each individual enhances well-being (Ryan & Deci, 2000b). Schüller et al. (2014) organized 29 ultra endurance athletes from Germany, Switzerland, and Austria into two groups: those with a high achievement motive, and those with a high affiliation motive, based on results from the delivered Picture Story Exercise (PSE). During the PSE participants were shown multiple pictures and were asked to write an imaginative story for each, depicting who the people are in the pictures, their thoughts and emotions, and how the story will end. The authors viewed a high achievement motive as a dedication to accomplishing goals that represent a standard of excellence. The affiliation motive referred to the concern of building and maintaining relationships with others. Schüller et al. (2014) found a significant connection between those who are more driven by an achievement motive

and fulfilling their needs for competence. A significant connection was also noted between those with an affiliation motive and fulfilling their relatedness needs. Knowing if a recreational athlete is more driven by an achievement motive or affiliation motive allows people (e.g., coaches, facilitators, teammates, family members) to tailor motivational tactics to have a positive consequence. As motivational tactics change to satisfy different needs and build intrinsic value, considering overall enjoyment of the activity seems paramount when I analyze intrinsic motivation.

Intrinsic motivation is possibly thwarted by a lack of participatory enjoyment. Higher levels of persistence and satisfaction were noted with autonomous and self-determined patterns during activities that garner higher levels of enjoyment (Rodrigues et al., 2020). Without the potential for career advancement, monetary gains, or other extrinsic motives, participation in leisure-time sport was more driven by enjoyment of the activity and pleasure of the game (Sarmiento & Marques, 2018). Kang et al. (2019) declared long-term adherence to recreational physical activity required recreational athletes to focus on fulfilling SDT's basic needs while finding activities in which they the participation.

Some degree of intrinsic motivation lies within almost all instances of recreational physical activity (Ryan et al., 2009). During an individual's leisure time they have a choice of how to spend it. When they choose to participate in a form of recreational physical activity there is likely to be an intrinsic value driving that decision. However, that does not guarantee they are only driven by intrinsic motivation, or that they possess more intrinsic motivation compared to others. They may also show indications of extrinsic motivation; however, their extrinsic motives may come in more autonomous forms compared to others'.

Although intrinsic motivation stands alone as the most autonomous form of motivation along the continuum of self-determination, certain extrinsic motives are considered more autonomous and can be categorized by internal regulation (Deci & Ryan, 2000). As one identifies a behavior to align with personal values, they may feel more autonomous in that behavior, despite also performing such behavior without ultimate internalization (Deci et al., 2001; Deci & Ryan, 1985; Ryan & Deci, 2000a). To be entirely intrinsically motivated to participate in recreational physical activity, one will likely feel a strong sense of enjoyment in their participation, while also fulfillment in their needs of autonomy, competence, and relatedness. But perhaps one has a strong desire to increase their physical health. They may participate in certain exercise routines that they are not entirely intrinsically motivated to perform yet have aligned such behavior with a personal value. Their commitment to their physical exercise may not be entirely motivated by intrinsic desires, yet they may still feel a keen sense of autonomy in their behavior. This behavior is likely classified between identified and integrated regulation, the more autonomous forms of extrinsic motivation compared to external and introjected regulation (Ryan & Deci, 2000a). It should not be assumed that positive consequences and well-being are not evident when an individual shows a strong sense of integrated and identified regulations.

Athletes who wish to improve their skill and outcomes of participation (whether measured by intrinsic or extrinsic factors) may commit to activities in which they are not as intrinsically motivated to perform yet value the development that it provides. Practicing their sport in poor weather conditions may not be as enjoyable of an experience, but athletes may endure less enjoyable experiences for the potential of increased performance. Kouali et al. (2022) used two surveys to measure motivation and well-being in 399 athletes from 15 different sports,

representing a mix of individual and team sports, as well as varying levels of competition (e.g., club, varsity, regional, provincial, national, and international). This study found integrated regulation and identified regulation showed moderate and strong predictions of well-being in sport participation. Despite feeling more integrated or identified regulated forms of extrinsic motivation Kouali et al. (2022) suggested that “athletes experienced a sense of purpose and direction in their sport life which indicates high levels of well-being” (p. 16). These autonomous forms of extrinsic motivation have shown to be significant predictors of an athlete’s well-being (Kouali et al., 2022).

Slight differences of motivational patterns exist between professional and recreational athletes (Sheldon & Watson, 2011). Modroño and Guillén (2016) recruited 140 individuals from 25 different countries and studied the motivation and self-concept of 54 professional, 25 recreationally competitive, and 61 recreationally non-competitive windsurfers. Each professional and recreational athlete showed high levels of intrinsic motivation to perform their activity. The difference in motivation was most notable between competitive recreational and non-competitive recreational athletes. Despite similar intrinsic motives, recreational windsurfers who regularly compete displayed more external motivation and external regulation compared to recreational athletes who chose not to compete. The existing extrinsic motivation of non-competitive recreational windsurfers came from introjected regulations, as they used more internal pressure and internal rewards to judge their accomplishments. This suggests non-competitive recreational windsurfers felt more autonomous in their evaluation and related their performance to intrinsic expectations compared to competitive recreational or professional athletes.

Extreme Athletes

As this study referred to specific activities as “extreme sports,” other terms have been used to delineate similar activities. This literature review will consider research into high-risk sports, action sports, and adventure sports within the same definition of extreme sports, as extreme sports is more encompassing, including modern forms of high-risk sports (Breivik, 2010). Researchers of extreme sports (e.g., Barlow et al., 2015; Woodman et al., 2019) and extreme athletes used a common definition of extreme sports from Breivik (1999): “all sports where you have to reckon with the possibility of serious injury or death as an inherent part of the activity” (p. 10). Barlow et al. (2015) noted that each extreme sport may come with varying levels of danger, some being relatively minimal. However, these sports were considered to be an extreme sport because it was assumed the participant was exposed to more danger and higher risks as they progressed in their practice and skill.

The following section will detail behavioral and motivational patterns of extreme athletes. A trend among these athletes were unique bouts of sensation-seeking behavior (Agilonu et al., 2017; Guskowska & Boldak, 2010). Sensation seeking behavior was defined as “the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). An in-depth view of sensation-seeking behavior is provided, along with personality characteristics, motivations to partake in extreme sports, and benefits one may receive from extreme sport participation.

Behavior and Motivation of Extreme Athletes

Those who participate in extreme sports share similar characteristics, which may attract them to similar activities. Extreme athletes have shown unique levels of sensation seeking

desires compared to those who did not participate in extreme sports (Agilonu et al., 2017; Guskowska & Boldak, 2010). Identified sensation seeking behaviors in extreme athletes were thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility (Guskowska & Boldak, 2010; McNamee, 2018; Woodman et al., 2013). Thrill and adventure seeking referred to the desire to participate in relatively risky activities which provide strong sensations deemed dangerous by others (Barlow et al., 2015; Breivik, 2010; Guskowska & Boldak, 2010). Experience seekers desired exciting emotions and risk with new activities, whether the novelty is in the form of unique locations, people, or physical activities (Barlow et al., 2015; Breivik, 2010; Guskowska & Boldak, 2010; Woodman et al., 2019). Related research used disinhibition to categorize feelings and desires of short-term affairs seeking immediate gratification where it was possible to feel disconnected from the self through impulsive behaviors (Barlow et al., 2015; Guskowska & Boldak, 2010). Finally, boredom susceptibility was the aversion of monotonous actions or activities which lacked any sense of excitement, interest, or novelty (Barlow et al., 2015; Guskowska & Boldak, 2010). These sensation-seeking behaviors along with their personality characteristics can lead individuals to participate in extreme sports, whether professionally or recreationally to fulfill their needs.

Sensation seekers focused on the rewarding aspect of risk-taking activities, rather than the actual risk (Zuckerman, 1994). The pay-off of a risky behavior or activity weighed heavier than the consequences. Each individual may partake in extreme sports with a different goal or in search for fulfilling a different need than others. As noted, athletes may seek different sensations. But most extreme athletes share common characteristics and motives other than being sensation seekers. Outgoingness and consciousness impacted risk-taking behavior (Agilonu et al., 2017), while elite extreme athletes have shown high levels of self-confidence (Bostancı et al, 2019). But

what extreme athletes had the most in common, despite level of skill, was their motivating factors of searching for fun, enjoyment, and challenge (Allman et al., 2009; Brymer & Schweitzer, 2012; Ko et al., 2008; Park, 2004). Novice and experienced BASE (buildings, antennae, spans, earth) jumpers reported the desire to acquire new skills that provide them with a sense of fun, accomplishment, and adrenaline rush, while overcoming fear (Allman et al., 2009). Professional freestyle motocross riders explained the fun and enjoyment of their activity to be a significant factor into their participation (Ko et al., 2008). Regardless of the specific sport, extreme athletes were driven by fun and skill development, while facing challenges and risk (Ko et al., 2008). These characteristics and motivating factors may be shared by athletes of more traditional sports but combining these with their sensation-seeking desires lend themselves to not having their needs satisfied by activities outside of the extreme sport realm.

Although extreme athletes participate in risky behavior, safety is still accounted for and of concern. Taking risks is not the driving force of participating in these activities. The main purpose is to fulfill certain needs and to feel a type of arousal; therefore, actions are taken to minimize the risk while still satisfying their sensation-seeking needs (Zuckerman, 1994). An example is of skydivers seeking a thrill, but properly inspecting, preparing, and trusting their safety equipment. Safety equipment and body protection are common among these sports due to the conscious risk, and fear of consequences from its participants. Extreme athletes still feel a sense of fear as they take extreme risks in their sport, but Brymer and Schweitzer (2012) explained that these athletes had built a unique relationship with the fear they feel. They embraced it. They allowed themselves to feel fear and their extreme sport participation was meant to overcome their fear to deliver a sense of control and transformation (Brymer & Schweitzer, 2012; Woodman et al., 2019). Experiencing fear and overcoming it to successfully

accomplish the task led to building substantial self-knowledge and feel personal growth (Arnould & Price, 1993; Ewert, 1986). Ewert (1986) described these experiences as leaving the person feeling “affirmed and renewed” (p. 42). Overcoming fear also allowed one to feel authentic and in control of their own destiny (Brymer & Schweitzer, 2012; Woodman et al., 2019). As athletes are aware of the risk they are pursuing and fear the consequences, they are conscious and motivated by the sensations and emotions felt when participating in their extreme sport.

Extreme athletes were described as sensation seekers (Guszkowska & Boldak, 2010; McNamee, 2018; Woodman et al., 2013), notably, disinhibitory. Extreme sports may allow athletes to fulfill their needs for disinhibition in a more positive manner compared to other stimuli. Alcohol, drugs, along with certain forms of crime can lead to experiences of short-term fulfillment of certain sensations, albeit at the risk of severe negative consequences for self and others (Woodman et al., 2019). Woodman et al. (2019) described positive risk-taking behaviors offering psychological growth to be “strikingly different to other forms of risk-taking (e.g., substance abuse)” (p. 420), and concluded that certain forms of risk may be good for self-esteem.

Emotional regulation may be a significant feature in extreme athletes’ sensation seeking behavior. Barlow et al. (2015) focused on alexithymia, a state in which one struggles to differentiate, understand, or describe their own emotions. One may feel a vagueness in everyday emotions. Extreme athletes may participate in extreme sports or continue increasing their risk-taking behavior as it provides them with definitive emotions, such as fear and other easily identifiable emotions. Some may be frustrated by their inability to verbalize the feelings received from extreme sport participation, so they continue to advance their risk-taking because it is the only way for them to conjure a specific emotion. However, extreme sport participants reported “experiencing significantly greater emotion regulation and agency during the activity”

(Woodman et al., 2019, p. 419). It was then noted that high agency and emotion regulation can lead extreme sport participants to report higher bouts of self-esteem.

Those who participated in recreational physical activity, including extreme athletes, received physical, psychological, and social benefits from their activity (Benzer et al., 1999; Eskiler & Ayhan, 2019; Okesanya & Ayoade, 2014). The benefits received increased if the participants activity fulfilled their innate desires of autonomy, competence, and relatedness (Kang et al., 2019; Schöler et al., 2014). SDT has shown to align within these populations and their motivation for general participation. Extreme athletes displayed unique characteristics of thrill-seeking behavior compared to those who chose not to partake in extreme sports (Agilonu et al., 2017; Guskowska & Boldak, 2010), but to gain a deeper understanding of recreational extreme athletes who continue their participation in an extreme sport after a significant injury requires further analysis of characteristics beyond specific sensation-seeking tendencies.

Self-directed Learning

Extreme sports are typically individual activities (Heggie & Caine, 2012). Because these individuals pursue the activity on their own, an investigation into how they learn alone is appropriate. To look at how they learn and develop, this literature review further explores SDL. SDL is a learning theory that can be analyzed as a learning process or through development of learner characteristics (Candy, 1991). The following section will depict SDL while focusing on characteristics of self-directedness.

Self-directed Learning Definition and Characteristics

Before dissecting SDL, it is important to acknowledge existing definitions of the theory based on completed research. The belief in learner responsibilities prior to initiating a learning episode (i.e., deciding what is to be learned, proper methods of learning, where the learning will

occur, and how the learning will be evaluated), is a common theme among SDL research, along with holding oneself accountable and internalizing motivation (Candy, 1991; Knowles, 1975; Tough, 1979). Garrison (1997) explained critical thinking should be emphasized when analyzing SDL while expressing appreciation to the previously mentioned common themes. Garrison (1997) stated SDL is “associated with initiating learning goals, maintaining intention, and striving for quality outcomes” (p. 26). Knowles (1975) specifically defined the theory:

SDL describes a process in which individuals take the initiative, with or without the help of others, in a diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (p. 18)

Guglielmino and Guglielmino (2001) referenced the same quote by Knowles (1975) to define SDL while adding

self-managed learning (often called self-directed learning) is a process in which the learner is responsible for identifying what is to be learned, when it is to be learned, and how it is to be learned. The learner is also responsible for evaluating not only if the learning occurs, but if it is relevant to the objective. (p. 37)

Tough (1979) focused on the learner responsibilities that are necessary prior to the learning episode. Detailed decisions and arrangements are meant to organize a successful learning episode (Tough, 1979). Self-directed learners take on more planning responsibility, as he stated, “The learner himself is responsible for most of these day-to-day decisions and arrangements, especially the decisions about what and how to learn in each episode” (Tough, 1979, p. 95). Candy (1991) also acknowledged the importance of learner responsibilities, along with self-management, self-monitoring, and motivation when studying SDL. However, he focused on the

intent of usage of SDL. The specific definition of SDL that researchers utilize can vary, depending on if SDL is being applied as a method of learning, or if it is being viewed as a goal of education. SDL is utilized as a process of knowledge acquisition, or a method to develop the characteristics that make up self-direction in learners (Candy, 1991).

To capture the appropriate lens for this research it is important for me to identify similar themes among definitions of SDL to synthesize existing beliefs. Evidence of learner responsibility prior to a learning episode, appropriate goal setting, identification and utilization of resources, and self-directed implementation of learning strategies account for major themes that are acknowledged across multiple definitions of SDL (Candy, 1991; Garrison, 1997; Knowles, 1975; Tough, 1979). These popular definitions of SDL share similar methods of learning, as well as share self-directed learner characteristics.

Characteristics of Self-Directedness

SDL can be analyzed as a learning strategy, or as a result of a learning episode (Candy, 1991). When viewed as a result of a learning episode, the focus of the intervention is on developing characteristics to build one's ability to be self-directed. This entails there to be specific characteristics that lend to the development of self-directedness. The common characteristics of self-directedness that are highlighted across literature are learner responsibility, awareness, self-evaluation, intrinsic motivation, autonomy, and self-efficacy (Candy, 1991; Garrison, 1997; Knowles, 1975; Tough, 1979). The concept of resiliency shows close associations with characteristics of self-directedness. Characteristics of those suffering and at risk of developing chronic pains also demonstrate close associations to characteristics of self-directedness. Resiliency and chronic pain are discussed as subthemes to characteristics of self-

directedness, as they may influence physical and psychological readiness of returning to an extreme sport after a significant injury.

Learner responsibility is a characteristic that was frequently mentioned in SDL research (Brockett & Hiemstra, 1991; Candy, 1991; Guglielmino, 1977). Self-directed learners show responsibility through initiative, independence, and persistence (Guglielmino, 1977). They self-determine what they desire to learn and seek appropriate resources to organize the learning episode. The ability to be proactive in identifying and obtaining resources, as well as the skill to appropriately utilize a variety of sources, originates from a sense of learner responsibility (Candy, 1991). A proactive approach to learning required the learner to accept personal responsibility, as Brockett and Hiemstra (1991) explained “learner self-direction refers to characteristics of an individual that predispose one toward taking primary responsibility for personal learning endeavors” (p. 29). Tough (1979) explained the significance of responsibility within self-directed learners as preparatory steps one must consider before initiating a learning episode. Personal responsibility lays the groundwork to the other commonly seen characteristics of self-directedness.

As a learner prepared themselves for a learning episode, awareness and self-evaluation afforded the learner adequate utilization of resourcing and the ability to adapt or modify the learning episode when needed (Candy, 1991; Guglielmino & Guglielmino, 2001; Knowles, 1975; Peck, 2014). Although a self-directed learner is expected to determine what they wish to learn and locate appropriate resources, they are expected to be efficient in their usage of resources (Candy, 1991; Knowles, 1975; Tough, 1979). Once resources are located, learners must relate to the information provided while collaborating with peers for deeper comprehension (Knowles, 1975). Resources should be utilized when navigating adversity, yet a level of

awareness is required to identify a potential conflict and employ appropriate methods to overcome challenges (Candy, 1991; Knowles, 1975). Candy (1991) stated self-evaluation is fundamental to learning endeavors and should occur through all its stages. Understanding personal strengths and weaknesses pertaining to the learning environment through awareness and self-evaluation can improve efficiency and chances of success (Candy, 1991; Knowles, 1975).

Responsibility, awareness, and strong evaluative skills helps to set a logistical framework to a self-directed learning episode. The learning episode is likely to be unsuccessful if the learner does not possess an innate desire to learn or change (Brockett & Hiemstra, 1991). Higher levels of intrinsic motivation and autonomy accompanied those who demonstrated higher levels of self-directedness and a desire to learn (Jones & Sheppard, 2012; Peck, 2014; van Lankveld et al., 2019). Enjoyment of learning and a high degree of curiosity accompanied the strong desire to learn, enabling self-directedness (Gugliemino, 1977). Human nature's growth is unlimited but accepting responsibility and a proactive approach to learning is required to unlock such potential (Brockett & Hiemstra, 1991). Once the desire has been identified, the learner must believe they are capable of learning. Brockett and Hiemstra (1991) acknowledged the link between self-direction and self-concept. The authors deemed self-concept to describe how an individual perceives themselves and stated, "a relationship exists between a positive self-concept and the extent to which one subscribes to principles of self-direction" (Brockett & Hiemstra, 1991, p. 123).

Self-concept is linked to autonomy. A sense of purpose, commitment, and appreciation of a learning experience combines to form a strong self-concept, lending itself to autonomous behavior (Candy, 1991). However, one's self-concept may be built by more than autonomy and being intrinsically motivated to learn or change. Van Lankveld et al. (2019) has shown high

levels of self-efficacy are seen in those who are more self-directed, which may also contribute to one's self-concept. But as this research focuses on motivation and characteristics of self-directedness as they pertain to those who are returning to an extreme sport after sustaining a significant injury, the concept of resilience plays a large factor into understanding the rehabilitation process while sharing characteristics with self-directedness.

Resilience

Self-directedness was conceptualized as an adaptive characteristic to enhance formal and informal learning to progress toward goal completion, mastering new skills, and revising knowledge (Raemdonck et al., 2011). The concept of adaptability is gaining recognition in trauma-related rehabilitation. Adaptability relates to an ability to overcome trauma and avoid psychological pathology after experiences of adversity. Trauma was explained as “people's adaptability that separates individuals into those who are capable of overcoming psychic trauma and those who fail to overcome such trauma and develop psychological pathology” (Kim et al., 2013, p. 1105). Resilience is thought to help counteract the damage caused by trauma.

Resilience is the ability to overcome trauma or hardship by maintaining or returning to a relatively healthy state after an initial decline in function (Hassett & Finan, 2016; Kim et al., 2013). Within the concept of resilience lies three perspectives: recovery, sustainability, and growth (Hassett & Finan, et al., 2016; Sturgeon & Zautra, 2010; Yeung et al., 2012). The recovery aspect of resilience refers to a person regaining equilibrium and returning to their perceived normal function after a stressful or traumatic experience. Sustainability refers to one's determination of goal achievement and decision-making that provides positive influences on self-esteem, meant to enhance overall resilience. Growth considers one's capacity to learn and develop due to the stress or trauma endured (Sturgeon & Zautra, 2010).

Resiliency shares characteristics with self-directedness and self-concept. Characteristics such as “Problem-solving abilities, empathy, self-efficacy, optimism, and family support strengthen a person’s resilience” (Kim et al., 2013, p. 1105). The ability to recruit intrapersonal resources of resiliency was a key theme among research (Newton-John et al., 2014; Yeung et al., 2012). As physical therapy patients strive to regain their assumed normal function and to not fall victim to psychological-related pathologies, they may require a strong sense of resiliency. One such psychological-related pathology that is often seen in those who have sustained a significant injury is chronic pain.

Chronic Pain

Pain typically accompanies physical injury, but pain and its treatment is broken down into different descriptors. In the most general terms, pain is referred to as acute or chronic, where acute pain is a typical response to injury and has a functional component to tissue healing. “Acute pain can be defined as the normal, predicted physiological response to actual tissue damage, or the threat of potential tissue damage” (Dutton, 2019, p. 70). Acute pain is treated as a symptom of tissue damage. Chronic pain can stem from an injury like acute pain or can potentially arise without prior physical injury. Pain that outlasts typical timeframes for acute pain or typical timeframes for tissue healing is referred to as chronic pain, as well as pain that arises without any defined injury, inflammation, or musculoskeletal degeneration (Dutton, 2019). Whereas acute pain is often treated as a symptom, chronic pain is viewed as a disorder (Dutton, 2019).

Since chronic pain is typically not in response to current tissue damage, inflammation, or degeneration, factors other than physical ailments are considered during treatment. Research had shown a correlation between psychological and psychosocial factors to chronic pain and chronic

diseases (Chimenti et al., 2018; Galvez-Sánchez et al., 2019; Gustin et al., 2015; Leombruni et al., 2016; Naylor et al., 2017). Levels of self-directedness and resiliency in those attempting to rehabilitate from pain and injury had a direct effect on successful rehabilitation and development of chronic diseases, as “the level of self-directedness at the beginning of therapy predicts the possibility and extent of improvement” (Conrad et al., 2013, p. 6). Those who were deemed to show low levels of self-directedness were described as lacking self-efficacy, poor internal locus of control, destructive, fragile, tended to criticize or blame, and demonstrated difficulty setting and pursuing goals, all of which negatively affected their motivation and self-esteem (Kim et al., 2013; Naylor et al., 2017). Lower levels of self-directedness were one of the most distinguishing characteristics of those with chronic pain (Conrad et al., 2013; Galvez-Sánchez et al., 2019; Gustin et al., 2015).

Eighty-seven fibromyalgia patients were compared to 83 healthy individuals, measuring personality traits, such as harm avoidance, novelty seeking, and self-directedness through surveys and questionnaires (Leombruni et al., 2016). Those who suffered from the chronic condition of fibromyalgia also displayed high levels of harm avoidance and low self-directedness. This group also displayed “borderline clinical anxiety and depression” (p. 5). Those who show higher scores of self-directedness reported lower perceived pain intensity, suggesting characteristics of self-directedness may affect a patient’s perception of pain. This may influence their approach to chronic pain and chronic conditions.

One’s level of resiliency has shown to affect development of chronic conditions. Newton-John et al. (2014) had 101 participants diagnosed with chronic pain complete several standardized questionnaires measuring pain intensity, pain self-efficacy, kinesiophobia, pain catastrophizing, disability, depression, anxiety, stress, resilience, and social support. The study

showed “significant positive correlations between resilience and pain self-efficacy, and significant negative correlations between resilience and fear avoidance beliefs, self-perceived disability levels, and average pain intensity levels” (p. 14). Resiliency research shows several parallels to self-directedness when analyzing its character traits and presence in those who are rehabilitating a physical injury and pain. One’s resiliency may influence one’s psychological readiness to return to an extreme sport after injury.

Psychological Readiness to Return to Sport

Significant physical injuries may require an extensive rehabilitation process to ensure physical safety before returning to an extreme sport, but the psychological component within this population should not be ignored. Fear of reinjury in those rehabilitating a significant physical injury and lacking adequate social support were recurrent themes in related research (Ardern et al., 2012; Clement, et al., 2015; Hsu et al., 2016; Kvist & Silbernagel, 2021; Podlog et al., 2014; Wadey et al., 2014; Yang et al., 2010).

Fear of Reinjury

Fear of reinjury, anxiety, denial, depression, frustration, tension, and decreased self-esteem were common psychological responses of injured athletes (Hsu et al., 2016; Podlog et al., 2014; Wadey et al., 2014). These feelings were more commonly reported initially after injury, subside during the rehabilitation process, then reoccurred as the athlete prepared to reintegrate into their sport (Hsu et al., 2016; Kvist & Silbernagel, 2021). This is known as the U-model (Kvist & Silbernagel, 2021). Heightened negative psychological responses as the athlete prepared to return to sport increased the risk of reinjury, delayed an athlete’s return to sport, and diminished sport participation (Clement, et al., 2015; Hsu, et al., 2014; Kvist & Silbernagel, 2021).

Lower levels of self-esteem, competence, and overall confidence in their ability to regain prior level of skills was shown to interfere with athletes' returning to sport (Arden et al., 2012; Podlog et al., 2014). Positive psychological responses were associated with a higher rate of returning to sport, faster rate of return to sport, and increased likelihood of reaching prior level of participation (Arden et al., 2012; Podlog et al., 2011; Podlog et al., 2014). Negative psychological reactions to injury and return to sport, most notably fear of reinjury, influenced neuromuscular deficits, muscular fatigue, poor muscle recruitment, restrict joint range of motion, decrease stability, and diminished coordination (Hsu, et al., 2016; Podlog et al., 2011). These negative psychological reactions were also noted in Wadey et al.'s (2014) research. They noted:

Athletes who experienced reinjury anxiety more intensely and habitually were more likely to disengage from or decrease actions or activities that would likely facilitate their return to sport (e.g., decreasing time and effort into one's rehabilitation), and consequently were less likely to experience a renewed perspective on sport. (Wadey et al., 2014, p. 8)

To help reduce these negative psychological feelings, research suggested goal setting, relaxation techniques, and mental imagery can reduce reinjury anxiety while building confidence (Arden et al., 2012; Podlog, 2011; Wadey et al., 2014). However, an adequate social support system may represent the most influential aspect to combat negative psychological feelings.

Social Support

Physical injuries can rid an athlete of their skills and function, leading to decreased competence and autonomy. Along with physical ailments, a loss of competence and autonomy caused athletes to feel "a sense of alienation from one's own body" (Podlog, 2011, p. 8). Yet, self-alienation is not the only form of isolation injured athletes may experience. Teammates and

coaches typically surround athletes of traditional sports while they are participating in their sport. After sustaining a significant injury, they are likely not as involved in daily practice, games, or team meetings. More time spent in rehabilitation settings causes athletes to feel disengaged from their coaches, teammates, and typical training partners (Podlog et al., 2011; Wadey et al., 2014). These athletes longed for social support throughout the rehabilitation process. Athletes are particular about their social support, and it has a significant impact on the athlete's likelihood of returning to sport.

Athletes desired different modes of support through distinct phases of their injury rehabilitation, but the desire for adequate social support remained constant throughout the entire recovery process (Clement et al., 2015). In the initial stages of rehabilitation after injury, athletes relied on family members, teammates, and coaches for emotional support (Clement et al., 2015; Wadey et al., 2014). Emotional responses to injury are high and adjusting to a new daily routine may be difficult. They become slightly less reliant on family and friends for emotional support toward the end of the rehabilitation. As they begin the process of returning to sport athletes required more informational support from their coaches, athletic trainers, and doctors (Podlog et al., 2014; Wadey et al., 2014). The athlete relied on their physical rehabilitation team and coaches to help them stay focused on positive outcomes, ensure proper treatment was given, and provided reassurance that they were safe to return to sport (Wadey et al., 2014).

Not all athletes are provided with the same amenities. Some athletes do not have access to necessary resources, despite feeling similar needs for social support. Division I college athletes were typically more equipped with support from athletic trainers and physicians compared to Division II and Division III college athletes (Yang et al., 2010). Because these athletes desire similar social support, but did not have equal physical rehabilitation resources and

personnel, they were required to lean on their family, friends, and peers for social support. Being involved in an individual sport at the recreational level, extreme athletes may not have the same social support and medical access as higher-level athletes of traditional sports. At this point it is unclear how recreational extreme athletes fulfill their social support needs.

Summary

Levels of self-determination and self-directedness in recreational extreme athletes who return to the extreme sport of motocross after a significant injury are unclear. However, levels of self-determination and characteristics of self-directedness have shown to affect behavior, perception of pain, and attitudes toward rehabilitation (Conrad et al., 2013; Galvez-Sánchez et al., 2019; Hsu et al., 2016; Kvist & Silbernagel, 2021; Leombruni et al., 2016).

Given the unique circumstances of recreational motocross athletes' performing their extreme sport as an individual participant in a recreational setting, SDT and SDL are viable learning theories to gain an understanding of this phenomenon. Acknowledging differences between intrinsic and extrinsic motivation helped determine participants' motivation toward the phenomenon in question. Understanding general behavior of recreational athletes and extreme athletes provided background to adequately interpret their motivation.

Recreational motocross participants require physical rehabilitation before returning to the sport but also may struggle to feel psychological readiness to return. Fear of reinjury and a lack of social support commonly affected an athlete's ability to return to their sport (Clement, et al., 2015; Hsu et al., 2016; Podlog et al., 2014; Wadey et al., 2014). Participants of this study may be particularly susceptible to these struggles given the sport's high-risk of injury and individualistic nature. Signs of self-directedness and understanding characteristics of SDL may detail what was required of these participants to learn to successfully navigate this phenomenon.

Chapter 3 - Methodology

This study used the phenomenological qualitative research method to explore the motivation and self-directedness of recreational motocross athletes returning to recreational motocross after sustaining a significant injury. This chapter provides an overview of the research methodology utilized in this study. The research question and researcher positionality are discussed. The research design is stated, then the means of data collection and data analysis follows, before expanding on ethical associations and trustworthiness of the study.

Research Question

The purpose of this phenomenological study was to explore the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross. This qualitative phenomenological inquiry was guided by the following research question:

RQ: What is the essence of self-directedness and motivation of recreational motocross athletes when they return to the sport after a significant injury?

Researcher Positionality

Relative to this research, I am defined as an insider, as Greene (2014) wrote, “Insider research is that which is conducted within a social group, organization or culture of which the researcher is also a member” (p. 1). I began racing motocross when I was 11 years old, and still ride recreationally. As an adult, I limit myself to a few local competitions per year, but I continue to ride recreationally year-round. I have sustained three major injuries because of my involvement with motocross, two as an adult. I had a complete fracture of my humerus (upper arm) when I was 13 years old, I sustained a bilateral talus fracture (broke both ankles simultaneously) when I was 29 years old, and most recently fractured four ribs, a clavicle, and a

scapula along with a punctured lung in a single crash at the age of 31. Despite the pain, having to use a wheelchair, sustaining significant functional limitations, and months of rehabilitation, I returned to riding motocross when I felt able. Through these occurrences, I bring with me experience and personal beliefs to this research.

I ride recreationally as often as possible. I often travel to different tracks alone, although I know there can be up to 200 other participants at the same track that day. I have made friends through my participation in motocross, and the social aspect has become incredibly influencing on my participation. I often alter my riding plans and attend different tracks depending on what my group of friends decide they want to do. Sharing the experience with others who are equally as passionate and enjoy the sport enhances my experience. However, I did not reintegrate the sport because of influences from others, or any seeking of a new social group.

Shortly after I graduated high school, I exited the sport of motocross. It was not feasible to continue riding while attending college, and I did not possess the financial means to continue my participation. I went without owning a bike until I was 27 years old. I was living in a different city than where I grew up and did not have any knowledge of the local motocross scene. I did not know where any tracks were located to ride, or if I would be able to find any races in the general area. I did not know anyone in the local area who participated in motocross. I felt I would be doing this alone, but I knew I wanted to eventually reintegrate myself into the sport.

At that time, I could not verbally express why I was so determined to ride motocross again. I knew I enjoyed the activity while I was younger, but also knew I could continue living a happy life without participating in motocross. I had a close group of friends outside of motocross that kept my social life fun and busy. I had other hobbies that brought me challenge and fulfillment. I had just started a new career that I enjoyed. I felt satisfied with the trajectory of my

life as a young adult. I did not believe I needed to take the substantial leap that is motocross to feel happy. Yet I felt a strong intrinsic desire and I could not escape the gravity of those feelings. Today, I have a clearer outline of personal philosophies and where motocross is situated in those values.

Motocross provides me a unique sense of challenge. It presents an opportunity to experience unique sensations. This sport brings a sense of fear and nervousness while accomplishing goals. I get butterflies in my stomach from excitement, but also anxiousness before I ride. Each lap, each obstacle, each decision on the bike provides a challenge that I work to overcome. I experience a constant flow of overcoming fear and achievement of challenges. I previously did not see myself as a typical thrill-seeker, but I have come to understand that instances of thrill-seeking behavior provide me the opportunity to fulfill several values I hold, while also receiving an inimitable sensation of fun.

Motocross provides me with a sense of community. It introduces me to unique individuals and a unique society. I have found many like-minded people, but also have been introduced to those who seem to live and think completely different than myself. I enjoy the ability to have these interactions, even during bouts of feeling uncomfortable in my surroundings.

I've learned participating in an extreme sport as a hobby has provided me with significant insight to knowing myself. I have several other hobbies, including physical activity and recreational sports which do not seem to provide the same opportunities. Perhaps it is the risk involved in motocross that heightens my need for awareness and personal reflection. I have always thought motocross provides me with something that I can't seem to find elsewhere. I still struggle to fully grasp everything that statement entails. However, this project has allowed me to

dig deep into personal thoughts and analyze innate characteristics which help answer some of those questions. Developing personal philosophies on self and life while understanding its effects on the principles that drive my decision-making has allowed me a deeper acknowledgment of the position motocross has in my life.

Being an insider, I am especially curious to examine others that have similar lived experiences. As I grow older, obtain more responsibilities in my personal and professional life, as well as note increased consequences to injury, I contemplate my decision to continue participation in such a dangerous activity. I do not want to give up this activity as a hobby, but I understand the possibility of this study's results on influencing my future participation.

Critics of insider research note the potential for excessive subjective analysis, which can skew the results (Brannick & Coghlan, 2007; Greene, 2014). Preconceived beliefs and expectations can threaten an objective lens and lead to assumptions based on existing subjectivity. Academic researchers should inquire with a detached perspective, lending analysis to a more neutral approach (Brannick & Coghlan, 2007). This is theorized to allow less interference from a researcher's biases (Brannick & Coghlan, 2007).

There are many benefits to my being an insider when conducting qualitative research. Since insider researchers are familiar with the organization that is being researched, they are less likely to feel the effects of culture shock (Greene, 2014). This allows insider researchers to easily blend into the environment. They also have a preexisting baseline understanding of the context, enabling them to better analyze verbal, visual, and tactile data (Greene, 2014). Greene (2014) acknowledged the benefit of easy access to participants. The familiarity of insider research allows for natural interactions and relationships. Performing hermeneutic phenomenological research requires the researcher to have a baseline understanding of the context to acquire new

knowledge and identify meaning of an experience (Aspers, 2004; Peoples, 2021; Sloan & Bowe, 2013). Being an insider supplied me with an advanced baseline to aid in data collection and analysis methods.

Rationale for Research Design

To understand the essence of experiences of recreational motocross participants who return to recreational motocross after sustaining a significant injury, I applied a qualitative approach to the research, utilizing phenomenology. Heidegger, who studied under Husserl, who is known as the father of phenomenology, developed his own interpretation of phenomenology and is emphasized throughout the study. However, various translations of Husserl and Heidegger's work exist, spawning several interpretations with slight variations (Dibley et al., 2022). Therefore, this study used common themes found across multiple translations and texts to interpret phenomenology.

Phenomenology focuses on unique experiences to understand its meaning (Dibley et al., 2022; Kafle, 2013). Understanding the meaning of lived experiences helps one understand themselves and their relationship to the world. The world and an individual are not separate entities; the world provides opportunities for experiences, and the individuals consciousness, knowledge, and previous experiences influence their current interpretation. Acknowledging prior understandings of the experience then reflecting on the experience allows for further questioning to enhance comprehension of the essence of the phenomenon. The connection between the world and an individual's interpretation of their experience to the world is where meaning is found (Dibley et al., 2022; Moustakas, 1994; Sloan & Bowe, 2013).

Not all experiences or lived phenomena are expected. Heidegger refers to this notion as "thrownness," as Dibley et al. (2022) explained "Humans are thrown into a life situation that can

shape their existence” (p. 8). The participants of this study enter the phenomenon at the time of sustaining a significant injury while participating in recreational motocross. The nature of this accident thrusts them into an unforeseen experience of acute trauma and injury rehabilitation. Humans are in a constant state of evolving since interpretation is a constant revision based on comparisons of prior understandings, context, and new analysis (Aspers, 2004; Dibley et al., 2022). Therefore, adequate interpretation of an experience is developed retrospectively. To assume final understandings are achieved as the experience is unfolding is neglecting the critical element of reflection. To allow for appropriate reflections, the finality of the phenomenon of this study was considered to be the participants re-entry of recreational motocross, which is the social context of the experience, while acknowledging proper interpretations can affect their current and future behavior.

Philosophical Foundation

The philosophical foundation of this research is constructionism and intentionality. Intentionality refers to the relationship of a subject’s consciousness to an object (Crotty, 2015). A person can experience an object while feeling a subjective emotion. The connection between the object and the created perception requires the individual to have a basic understanding of self and objects of the world (Crotty, 2015; Moustakas, 1994). Intentionality rejects the idea of total subjectivism and total objectivism. Instead, intentionality gleans meaning from the interaction between the subject and the object (Crotty, 2015). Consciousness informs interpretation of objects, as “consciousness is directed towards the object; the object is shaped by consciousness” (Crotty, 2015, p. 44).

Intentionality lies within the philosophy of constructionism. The constructionist view states consciousness is required to develop meaning (Crotty, 2015). The world is an object, and

smaller objects are scattered among the world, but human consciousness is required to appreciate those objects. The recognition that the consciousness shows towards the object is where humans create meaning towards their surroundings (Crotty, 2015; Moustakas, 1994). For example, a bird may view a tree as a safe harbor to build a nest away from predators. A sun-beaten hiker may assess the tree as a welcomed blanket from harsh sunlight, and a woodsman may judge the tree to be a source of fire-kindling to keep his family warm during a cold spell. These example shows experience, intentionality, and intuition form to create knowledge, and varying subjects hold unique bits of knowledge.

Researchers can gain access to participants' consciousness through reflection and study their conscious perception of specific objects or experiences (Crotty, 2015; Manen, 2014; Moustakas, 1994). As it relates to phenomenology, the object in which the subject is conscious of is a phenomenon that was experienced by the subject (Bhattacharya, 2017; Crotty, 2015). To make meaning of one's experience, the specific phenomenon must be analyzed. This can lead to gaining new insight and perspectives regarding the subjects' perception of the experience (Peoples, 2021). To analyze the phenomenon in question, this research used the SDT to understand the participants motivation, while SDL provided the lens to identity characteristics of self-directedness.

Phenomenology

The methodological framework used for this study was a phenomenological inquiry, specifically, hermeneutic phenomenology as described by Martin Heidegger. Hermeneutic phenomenology seeks to determine how knowledge and meaning are constructed. It was created to better develop interpretation of a phenomenon, rather than understanding description (Moustakas, 1994). Hermeneutic phenomenology was initially used to analyze the interpretation

of texts; this idea guides researchers to focus on the subject's language, historical context, and interaction of cultural elements (Bhattacharya, 2017; Peoples, 2021). The phenomenon in question for this research was the experience of sustaining a significant injury while participating in motocross as a recreational participant, and the motivation and self-directedness that contributed to successfully returning to the sport that caused the significant injury.

Phenomenological research focuses on the existence of a human and their place within a context and the world (Kafle, 2013). This view is aligned with past phenomenological philosophy as the root of it states the world (object) and human (subject) should not be analyzed to stand alone of each other, but both are inseparable when searching for meaning. The interaction between subject and object is multi-layered and potentially holds more value than what can be seen on the surface of otherwise normal interaction (Horrigan-Kelly et al., 2016). Perhaps subjects are unaware of the influence their relationship to an experience has presided over them. Hermeneutics assumes a relationship between conscious description and social structures. Hermeneutic phenomenology allows researchers to explore unexpected and potentially transformative data when analyzing this relationship (Kafle, 2013).

Hermeneutics

The term "hermeneutics," meaning 'to interpret,' is the art of interpretation (Peoples, 2021; Sloan & Bowe, 2013). Contrary to Edmund Husserl's concept of epoché, Heidegger did not believe one can remove their existing beliefs and prior experiences when analyzing a phenomenon (Heidegger, 2010; Peoples, 2021). He proposed that to make meaning of existence requires existence to be aware of itself. A form of self-understanding is essential to understand any subject. Reflexivity became a crucial structure to Heidegger's method of interpretation (Horrigan-Kelly et al., 2016). Reflexivity refers to the researcher's awareness of their

preconceptions and personal experiences with the subject in question to approach the research with a fresh perspective. Balance between data, interpretation, and understanding subjectivity is required for a person to properly make meaning (Horrigan-Kelly et al., 2016; Sloan & Bowe, 2013).

The act of moving between text, context, and interpretation is known as the hermeneutic circle, where questioning and understanding exists within this process (Aspers, 2004; Peoples, 2021). One must have a basic understanding of a subject before one can ask an intelligent question in its regard. Complete ignorance of a subject will not yield an intelligent question, yet the answers to the questions proposed lead to adjustments and revisions of preconceived perceptions (Peoples, 2021; Sloan & Bowe, 2013). Heidegger argued that “interpretation is a constant revision” (Peoples, 2021, p. 33). To make meaning of a phenomenon, one must work to understand smaller aspects of the phenomenon and how they relate to the phenomenon as a whole and vice versa (Aspers, 2004; Peoples, 2021; Sloan & Bowe, 2013). There is a back-and-forth between context and data collected until the meaning of a phenomenon is understood by recognizing how the phenomenon’s smaller aspects and the whole interact and inform each other.

Hermeneutic Phenomenology

Heidegger believed hermeneutics to be the process in which human existence is interpreted (Aspers, 2004; Peoples, 2021). He found the judgement towards a subject to be a preconceived interpretation with the potential of learning to alter or develop existing presumptions. Since a level of understanding of a subject is necessary to properly interpret and build knowledge, partnering the theory of hermeneutics with phenomenology assists researchers

when analyzing a lived experience to discover meaning (Sloan & Bowe, 2013). These concepts are the foundation of Heidegger's theory of Hermeneutic phenomenology.

Hermeneutic phenomenology is focused on the subjective experience of individuals to draw the objective truth of the phenomenon. Participants of this research experienced significant injuries and navigated their rehabilitation to return to normal life yet returned to a recreational sport that has the capability to cause significant injury again. These experiences created a shared objective reality for the participants. This research sought evidence of self-determination and characteristics of SDL within the phenomenon. By using the hermeneutical phenomenological approach, I interpreted the subjective experiences of the participants through the lenses of determination and self-directedness.

Heidegger argued for the concept of the hermeneutic circle when posing a question about a subject, stating "every seeking gets guided beforehand by what is sought" (Moran, 2002, p. 236). Dibley et al. (2020) referred to the researchers prior knowledge of a phenomenon as preunderstanding. One's preunderstanding allows for a question to be asked, but is also capable of distorting the answer. To keep from allowing prejudices to alter understanding humans must account for the environment, surrounding culture, and attitude of self. This process allows the researcher to analyze several smaller aspects of the phenomenon to the whole phenomenon (Dibley et al., 2020; Peoples, 2021). Understanding authentic versus inauthentic ways of being aids this process (Moran, 2002).

With consciousness comes an innate desire to live authentically to oneself, where authenticity is based on subjective understanding of an experience and its impact on being. Normal times of life and everyday routines do not register as being significant to oneself or sense of self-understanding and ownership; however, humans can become acutely aware when an

experience seems substantial (Ilharco, 2005). A person is then able to respect, understand, and appreciate the phenomenon, either in the moment or following its completion. During these more authentic times, one desires their sense of self to be more whole, and to unify their existence with meaning. The awareness of an authentic experience gives oneself a sense of ownership to existence, and purpose. Through the innate desire to be authentic, one can allow prejudices towards a subject to be transformed by new understanding (Kafle, 2013; Peoples, 2021; Sloan & Bowe, 2013).

Selection of Participants

I utilized criterion sampling, convenience sampling, and snowball sampling strategies to select participants. Criterion sampling is used to clearly indicate inclusion and exclusion criteria for participants to fit (Suri, 2011). To be included in the study, the participants had to have sustained a significant injury while participating in motocross as an adult. An injury was deemed to be a significant injury based on the definition outlined in the list of operational definitions. Injuries as a child or adolescent were excluded. Injuries that occurred outside of their participation in motocross were not included. Participants were also excluded if they had ever received any financial compensations from competing in motocross, or if their participation in motocross was coupled with any professional or occupational responsibilities. This helped to fulfill the requirement of being a recreational athlete. Convenience sampling refers to using a target population based on ease of access, time, and location (Golzar et al., 2022; Lopez & Whitehead, 2013). Being an insider relative to this study's target population helped me access participants. I sent a solicitation email to amateur motocross groups (Appendix B). I recruited participants at amateur motocross races, organized practice sessions, banquets, and related social media groups (Appendix C). Snowball sampling is similar to a referral system. The researcher

gathers information from a few participants, then relies on the participants to put the researcher in touch with friends, family members, and peers who match the criteria for participation (Lopez & Whitehead, 2013). Two participants were recruited via snowball techniques.

The number of participants needed for a qualitative research study has been debated (Creswell & Poth, 2016). Data saturation refers to a point in the data analysis process where no new information is likely to emerge from further data collection (Fusch & Ness, 2015; Marshall et al., 2013; Mason, 2010). Some researchers discussed saturation based upon the similarities of the participant's experience; the more alike the experience, the fewer participants are needed to reach saturation (Daniel, 2012; Guest et al., 2020). However, qualitative researchers start with a range of five to 25 participants, with the stipulation that interviews are conducted until saturation is reached (Creswell & Poth, 2016). Daniel (2012) recommended six to eight participants for phenomenological research designs, which is the guide this study followed. Six participants were interviewed for this study.

Participant's ages ranged from 31 to 68 years old. Although female recreational motocross riders were recruited, only male's volunteered to participate. All participants had a high school education, two participants had a bachelor's degree, and one participant had a master's degree. Racing experience within recreational motocross as an adult ranged from 6 to 40 years.

Pilot Study

After receiving the proposal defense and Institutional Review Board (IRB) approval, this study was piloted through an interview process imitating the formal study. I interviewed one person who met the inclusion criteria for the study, transcribed the interview, and completed a round of data analysis matching the proposed study before initiating the follow-up interview.

After transcribing the follow-up interview, I gathered more analytic memos and completed an interpretive summary. The pilot study participant had sustained several significant injuries, so I chose to focus on what they believed to be their most significant injury. Five of the six participants of the formal study reported several significant injuries, so I maintained the strategy of focusing on what the participants believed to be their most significant injuries. The pilot study also allowed me to refine follow-up questions during each interview. This enhanced my ability to navigate the direction of the interviews and follow-up questions during the formal study to gather richer data lending itself to deeper analysis. Refining the probing and follow-up questions were made possible by practicing the data analysis process.

Protection of Human Subjects

The Institutional Review Board (IRB) granted approval before the data collection phase is initiated. IRB approval confirmed the research remains consistent with the ethical standards outlined by the review board.

To protect the rights of the participants, an informed consent documents was distributed to the participants. The informed consent form outlined the study and its purpose, along with methods used, any anticipated risks or benefits, and the extent of confidentiality. Each participant reviewed and signed the informed consent form before being officially included in the study. All participants were given pseudonyms to protect their identity. Participants were also allowed to review the transcript to check for inaccuracies or any sensitive data that would potentially identify them. It was communicated verbally, as well as through the informed consent forms, that pseudonyms were used to protect the participants' identities. The participants were informed that I will retain data obtained on a password protected laptop for three years, upon which it will be destroyed.

Participants were made aware their involvement is strictly voluntary, and they were free to exclude themselves from the study at any time if they wished to no longer participate. A reason for withdrawal from the participants was not required. It was explained that in the event of withdrawal all recorded data would be removed from the study.

Data Collection

This research focused on each participant's experience of returning to the extreme sport of recreational motocross after sustaining a significant injury. The data was collected through interviews, analytic memos, and reflexive journaling. Initial interviews were conducted, followed by initial data analysis. Follow-up interviews were then administered, with interview questions based on data gathered from the initial interviews.

Interviews

To best understand the influence a specific phenomenon has on a subject this study consisted of an initial interview then a follow-up interview with each participant reflecting an in-depth open-ended interview style. In-depth, open-ended interviews are best practiced when performing deep analysis on a subject's experiences while preparing a few key questions to guide the direction of the interview (Bhattacharya, 2017; Saldaña, 2020). This style of interview helped to better encapsulate the entire experience. The initial interviews lasted between 60 to 90 minutes as the participants told the story of their experience (Appendix A). Follow-up interviews allowed me and the participants the ability to reflect on initial questions and interpretations, then validate and expand on the analysis (Bhattacharya, 2017; Saldaña, 2020). The follow-up interviews lasted between 40 to 70 minutes. Prior to the follow-up interviews, I analyzed and coded data from the initial interview.

Before the interview process began, each participant received and signed the informed consent form (Appendix D) and reviewed instructions for completing a blueprint of their personal injury timeline (Appendix E). Each participant was asked to complete a timeline of their injury and recovery, outlining their physical injury and function, mental state, what learning occurred, and where motocross fits into their life today. To provide some context to the timeline blueprint, I created my timeline (Appendix B).

Face-to-face interviews were achieved through technology-based videoconferencing. Zoom™ was the resource to conduct the interviews. This platform allowed the participants and interviewer to observe body language and immediate surroundings, enriching the data. Using this video platform increased the reach of participants. The audio recording of the interview was retained for transcription and the video portion was then deleted.

Data Management

Data management is an ongoing process throughout any qualitative research project, beginning before the data collection process has started (Cohen et al., 2000). Proper data organization allows for data to be readily available for adequate coding and analysis. This better prepared me to identify deep insights and connections of the data to their research purpose and research question (Cohen et al., 2000). The interviews were recorded via Zoom and transcribed, word for word using Zoom's transcription feature. I then reviewed and edited the transcription to ensure it correctly matches the video recording. The interview transcripts, along with analytic memos, journal entries, and interpretive summaries were stored on a password-protected laptop.

Data Analysis

Hermeneutic phenomenology works to analyze and interpret a phenomenon as a whole experience (Cohen et al., 2000; Horrigan-Kelly, 2016; Moustakas, 1994). To adequately make

meaning of the phenomenon, a specific process of analysis was followed. Individual parts of the phenomenon inform the whole phenomenon and vice versa; therefore, it is crucial that the whole phenomenon is not lost during the analysis process (Dibley et al., 2020; Moustakas, 1994). To account for the whole phenomenon and its individual parts, I moved back and forth between the transcripts, my analytic memos, and journal entries. The process of reading and rereading the data for further analysis and deeper meaning is known as working within the hermeneutic circle (Aspers, 2004; Cohen et al., 2000; Dibley et al., 2020; Peoples, 2021). This practice properly aligns with scholars' beliefs of how to appropriately analyze phenomenological data through identifying clusters of alike data and building deeper meaning through observation of recurrent themes (Dibley et al., 2020; Saldaña, 2020). Identifying my preunderstanding of the phenomenon, performing multiple rounds of data coding, and summarizing each interview performed aided my process of interpretation while aligning with the hermeneutic circle. The following sections will further detail the analysis process.

Preunderstanding

Researchers conducting data analysis possess their own understanding of a phenomenon based on lived experiences, and personal perspectives (Dibley et al., 2020). Experience of the phenomenon or a basic understanding prior to the research is initiated is required for adequate meaning to be made (Peoples, 2021; Sloan & Bowe, 2013). Identifying preunderstandings is the initial step of data analysis. This allowed for proper analysis through the hermeneutic circle, as I laid the foundation of current understanding prior to data collection, which was referenced and modified based on emerging themes. To become aware of preunderstanding, I contemplated, wrote, and journaled my personal experiences of the phenomenon in question prior to data collection. Evidence of journaling my preunderstandings can be found in Appendix B.

Journaling

A research journal kept by the researcher can aid in the progression of analysis and interpretation and provide the researcher space to note their thoughts and beliefs on the research throughout the entire research process (Bhattacharya, 2017). Reflexive journaling enhanced my understanding of my subjectivity throughout the research process while uncovering and comparing categories, ideas, and themes.

Analytic Memos

Data can also be identified through a qualitative researcher's hunches and intuition, which may present deeper results and analysis (Saldaña, 2020). Analytic memos allow the researcher to "dump your brain" (Saldaña, 2020, p. 58) regarding thoughts on the participants, experiences, the phenomenon, connections between participant responses, or anything seemingly relevant to the data analysis process. Such memos were a part of the data collection phase, prior to the initial and follow-up interviews and the time between the interviews. Whereas reflexive journaling provided a broad horizon to reflect on, analytic memos were specifically applied to the data analysis process to develop follow-up interview questions and organize the data into emerging categories and themes. This technique helped me navigate my thoughts through text and context toward deeper understanding and a solution if dilemmas were to arise (Saldaña, 2020). Analytic memos describe several forms of content, such as "future directions, unanswered questions, frustrations with the analysis, insightful connections, and anything about the researched and the researcher are acceptable content for memos" (Saldaña, 2020, p. 59). Analytic memos helped me work within the hermeneutic circle by progressing my evolution between text, context, and interpretation.

Reflexivity

Hermeneutic phenomenology employs reflexivity to aid proper interpretation (Horrigan-Kelly et al., 2016; Sloan & Bowe, 2013). Reflexivity required me to consider the participants' position and assumptions to the phenomenon, then allowed me to bring forward their preconceptions which had the potential to influence interpretations (Horrigan-Kelly et al., 2016). This helped me refrain from premature understanding of the phenomenon. Reflexive journaling prior to data collection and throughout the research process helped me acknowledge any preconceptions that might have altered proper interpretation.

Coding

Once transcribed, I read the entire transcript and employed a descriptive coding technique. Descriptive coding summarizes the basic topic of a passage of qualitative data using a single word or short phrase (Saldaña, 2020). Relevant quotes and passages from the transcription were coded with each reread of the transcription. For example, I used the term "reflection" when Tucker contemplated his participation in recreational motocross after he sustained his significant injury. I then made a quick summary of the passage next to the code for future reference and clarity. Using descriptive codes for the initial coding process aided my second cycle of reviewing the data by identifying patterns across the transcripts of each participant (Saldaña, 2020). One example of an interview transcript with coding is depicted on the right-hand side of Figure 3.1.

[illegible]

I wrote an interpretative summary for each interview after several review of the transcripts and coding. Along with identifying descriptive and pattern codes, formulating the interpretive summaries encouraged me to refer to the research question to make sure the direction of the interviews and collected data were appropriately aligned to the intended purpose of this study. Applying the coding process to each interview summary aided my ability to categorize the data. I discovered deeper analysis as I compared the transcripts to the interpretive summaries. Practicing the hermeneutic circle through referencing prior data and reexamining current codes provided further understanding and interpretations with each cycle of coding (Cohen, et al., 2000; Dibley et al., 2020). Examples of the interpretive summaries and coding process is also depicted in Figure 3.1.

Figure 3.2. *Cycle of Coding to Develop Follow-up Interviews*

Tucker: Gathered information/used and found resources/showed responsibility - Used wife's knowledge and textbooks - Seems up to date on concussion research - Did he have this research before the injury? Once he was injured? How/where did he obtain it? - Discussion with his wife about napping after a concussion - Implemented breaks during screen time - How did he implement breaks during screen time? - Where did his concussion research come from? Living life to the fullest/one shot at life - Several quotes about you only get one shot at life - He talked about a feeling he gets when he's riding, and that feeling was motivating him to ride again - Didn't explain the feeling or the benefit he feels very well - What about moto makes him think he's living life to the fullest? - What does moto provide him, intrinsically? - Can he live his life the way he wants to and get the most out of it without moto? Changed his outlook at the sport/thought about his participation approach/alter his participation - Asked himself "what am I doing this for?" not in a negative tone, but of contemplation - He decided he would be safer to change his goals when he rides - Ride for fun and safety, not try to be the fastest or take the most risks - He seems more content with a more relaxed riding style rather than focusing on skill and speed improvement - Does performance not affect happiness and fulfillment? - How did he get to a place where he could focus on safety and fun instead of skill progression? - What self-talk/self-analysis was performed to reach that mindset? - Has his new perceptions affected the original intrinsic feeling he gets from riding? - Could he had made this mindset shift without getting hurt? Would he still be trying to go as fast as possible?	James fear/scared of getting hurt - Through several previous injuries he had not been scared of getting hurt again until most recent crash - Seems mostly scared of jumping (need to clarify) - Fear has seemingly reshaped his participation and perspective of the sport - Is he scared of the pain that comes with injury? Scared of not being able to work? Scared of not fulfilling family responsibilities? Is it age-related? Why is he so fearful now compared to previous injuries? - Do certain tracks cause more fear? How does he overcome the fear? - In detail, how has the fear affected his participation? - Does being more fearful seem to keep him safer? - Does the fear affect the benefit he receives when riding? Does it affect his enjoyment? Social scene/friendship - Moto guys are some of the best friends he has - Enjoys the bench racing, talking about pro racing, bike setup, shopping for parts/gear (contextual environment other than friendship) - Social aspect seems to affect his riding schedule - People outside of the sport did not seem to want him to ride after injuries - If fear keeps him from riding, does he miss out on the social aspect? - What kind of influence does the social aspect have on his participation? - What influence did people outside the sport have on his decision to keep riding? - Did he communicate with moto friends during his injuries and rehab? How did being away from riding and his friends affect his motivation? What success looks and feels like to him - When he was younger he raced for championships - He has not raced for championships in several years - He does not care about race wins as much now - Clarify his views of a successful day riding, what progress feels like - How does he view progress and success in his motocross participation? - How does his view of progress affect his motivation to continue riding?
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Categorizing

I reread the original text and interpretive summaries while comparing my preunderstandings and pattern codes to identify emergent categories. I then further outlined my interpretations and emergent categories to guide my follow-up interviews, as seen in Figure 3.2. The process of identifying themes and potential meaning required several visits to each form of data, along with thoughtful depiction (Dibley et al., 2020). The results of the initial data analysis, including emerging categories and connections across participants, influenced the direction of each follow-up interview and interview questions. The entire data analysis process was applied to each follow-up interview to enhance understanding.

Final Interpretations

Final interpretations of common meanings and shared experiences from the participants led to an encapsulation of the phenomenon (Dibley et al., 2020). Ensuring alignment of the hermeneutic circle through the data collection and analysis process encouraged me to revisit the

categories while comparing emergent themes across participants. Combining my preunderstanding of the phenomenon to subsequent steps of thorough data analysis facilitated the development of the final interpretations. The encapsulation of the phenomenon was not meant to be a final statement of the phenomenon for all who may encounter it. Instead, it represented the interpretation of shared meaning between me, and the participants involved in this study (Dibley et al., 2020).

Trustworthiness

Strong qualitative research can lead to rich discussion and education across disciplines, as well as enhance future research (Tracy, 2010). To ensure trustworthiness and credibility, this research adhered to Tracy's (2010) criteria for excellent qualitative research. Of her noted criteria, adhering to the proposed research design helped demonstrate a worthy topic, significant contribution, meaningful coherence, rich rigor, credibility, resonance, and ethics (Tracy 2010).

A worthy topic is one that expands on a phenomenon of which research and the general public does not have a thorough understanding (Tracy, 2010). Delving into the experience of recreational motocross athletes returning to their recreational sport after a significant injury had yet to occur in research. This study provides opportunities for these athletes and medical professionals involved in significant injury rehabilitation to gain insight with new context. The findings of this study also produced novel contributions to self-determination and self-directed learning theories. This study's topic and findings aimed to influence a significant contribution to varying disciplines (Tracy, 2010).

Good depth of description in my methodology and analysis adds credibility to qualitative research (Tracy, 2010). Thick description provides concrete details that specifically relate to the data, providing evidence and clarity of the analysis process. It also allows the reader an

opportunity to make their own conclusions on the phenomenon in question. I utilized techniques to ensure credibility, such as member reflections. Member reflections allowed participants of the study to question, critique, affirm, collaborate, and provide feedback to me during the data analysis stage of research. Transcripts of participants' interviews were made available to the participant to check for accuracy. Follow up conversations with the participants through phone calls, text messages, and face-to-face interactions after the formal interviews concluded ensured adequate member checks were performed. This collaboration encouraged further analysis and meaningful development of interpretations (Tracy, 2010).

Attracting the reader through enticing writing and formal generalizations improved the resonance of qualitative research (Tracy, 2010). The goal was to provide research that has a relatively significant impact on its audience. Dense analysis plus creative writing that is able to capture the reader's attention and imagination can provide the research with aesthetic merit, leading to enhancing its resonance (Tracy, 2010). Energized writing that evokes an emotional and vicarious experience can entail strong resonance. My interpretation of findings and proposed implications for practice depict themes related to recreational motocross athletes and injury rehabilitation that research had yet to analyze.

Ultimately, participant identity and safety were of utmost importance. Adherence to the IRB along with maintaining mindfulness toward research participants and research interpretations ensured an ethical research study (Tracy, 2010).

Summary

The purpose of this phenomenological study was to explore the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross. To better understand the participants motivation and

characteristics of self-directedness, the SDT and SDL combined to form the theoretical framework. I used hermeneutic phenomenology to align the phenomenological framework and methods of this qualitative study.

Semi-structured and follow-up interviews allowed me to collect data. Additionally, analytic memos and journaling aided my data collection. The data analysis process consisted of transcribing, reading, coding, and categorizing the data, then developing interpretive summaries to develop final interpretations and themes. As new themes emerged from the analysis process, my continuous reexamination of the data provided an ongoing back-and-forth between understanding and the text. As prevalent themes became saturated through application of the hermeneutic circle, I identified and described my final interpretations. To ensure trustworthiness and credibility, this study adhered to Tracy's (2010) criteria for excellent qualitative research.

Chapter 4 - Findings

While emphasizing self-determination and characteristics of self-directed learning of recreational motocross participants, this research study set out to explore the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross. In this chapter I will provide the participants' background story of injury and the themes from the data analysis.

Research Question

This qualitative phenomenological inquiry was guided by the following research question:

RQ: What is the essence of self-directedness and motivation of recreational motocross athletes when they return to the sport after a significant injury?

Participants' Injury Story

Most participants of this study sustained multiple significant injuries on separate occasions from their participation in recreational motocross. The participants were asked to highlight what they perceived to be their most significant injuries.

Joe

Joe sustained the most significant injury of his life trying to complete a routine obstacle while avoiding another rider on the track. A slower rider in front of him landed short on a jump that Joe had been completing with ease. Joe had to change his approach, altered his assumed trajectory, landed short of the targeted area, and was thrown off his bike. He landed flat on his back. Joe sustained a complete T4 spinal cord injury. He was paralyzed from the chest, down. His memory of the events immediately after the crash are minimal and does not recall much until six to seven days after the injury. He laid in ICU at a local hospital for 12 days, while his family

was given the options of immediate surgery or delaying the procedure. Immediate surgery gave him a better chance at walking, but doctors gave him a 50/50 chance of surviving the surgery. Delaying the procedure improved Joe's odds of surviving surgery, but it was almost certain he would never walk again. His family chose to delay surgery to improve his chances of survival. Through extensive rehabilitation Joe was able to recover and has navigated life through a wheelchair since the time of injury. He was able to initiate his transition back into recreational motocross roughly one year after his injury.

Tucker

Tucker raced motocross as a kid but spent 12 years away from the sport in early adulthood. As he transitioned back into the sport, he reported riding with the similar aggression and ignorance to risk as he did when he was a kid. Not long after reentering the sport, he sustained a concussion from a crash. He described attempting a new jump for the first time, but he mistimed it, which led to a hard crash. He explained experiencing the initial effects of his concussion through three major phases. The first phase started as he regained consciousness immediately after his crash. During the initial moments he felt confusion as to what had occurred and where he was. When he opened his eyes, he saw a man standing over him asking if he was okay. Almost instinctively, he explained he was fine, yet he noticed unusual difficulty getting on his bike and riding to his truck. After sitting down to collect himself he loaded everything back in his truck and drove home. The second phase came roughly five hours after the crash as he noticed he felt slightly more aggressive to normal situations, along with agitation due to difficulty formulating clear thoughts and words. Later in the day he decided to take a nap and noticed any feelings of aggression and agitation were gone. But there began the third phase of feeling "fuzzy" with a severe, persistent headache. He felt he could be fully functional and

aware, but the daze of a dreamlike state along with the headache reminded him he was not his normal self. Tucker resumed his participation in recreational motocross just a few weeks after his concussion.

James

James chose to focus on two of his previous injuries. His first significant injury from recreational motocross was a ruptured spleen. Large ruts leading to the top of a jump made completing the obstacle very difficult. He slightly lost control approaching the jump, causing his front and rear tires to track through adjacent ruts (cross-rutted) going up the jump. His bike landed sideways on the track and James was thrown off the bike and hard into the ground. The impact from hitting the ground caused his spleen to rupture. James spent several days in the hospital due to his ruptured spleen, the same hospital that his partner was currently admitted to give birth to their child. He explained shortly after his crash his wife went into labor, so he was in his own hospital room for his injury while she gave birth to their son.

The other injury James chose to highlight was a crash which led to multiple fractured ribs and a collapsed lung. James was entering the track and decided to attempt a jump, despite the altered approach compared to the natural flow of the track. The shortened approach caused him to not carry enough speed over the jump. His bike awkwardly bounced off of the jump and caused him to get whipped off the side of his bike. A hard fall on his back resulted in multiple rib fractures and a punctured lung. He explained quickly feeling significant pain, but he did not believe he had sustained a significant injury. Friends helped James load his bike and equipment in his truck and he drove home. After three days of unwavering pain and difficulty breathing, his partner convinced him to go to the hospital, where the extent of his injuries was revealed. James

said he returned to participating in recreational motocross within a few months after each of the injuries.

Andy

During take-off of a high-speed jump, Andy's motor rapidly and unexpectedly increased its RPM's due to a mechanical abnormality, then shut off, all while in the air. This caused the front end to raise until the bike was almost perpendicular to the ground. Andy remembered the incident up to this moment, then stated he woke up in a hospital bed. When the bike hit the ground, he was trying to hang on to the bike and his chin crashed into the handlebars. Andy sustained a fractured jaw. The impact from the crash also caused a concussion. The injury required his jaw be wired shut for a month. He was unable to chew any food, so he was on a liquid diet for that duration. He was unable to talk, and simple activities, such as standing up from a chair and lying in bed, were painful to perform. Andy was able to return to recreational motocross after roughly four months of rehabilitation.

Cody

Cody claimed his most recent injury, an ankle fracture, had been his most significant injury from his recreational motocross participation. He attended a race at a new track, and quickly noticed there was a big jump that looked fun, but a little dangerous. During the first practice of the day, he gave it an attempt and easily cleared it. He continued to attempt that jump for the rest of the race day despite saying it was an odd jump. "I even told my friend that it was kind of odd and I don't really like it. I thought I should probably quit doing it, but then I saw a little kid do it in front of me and I just thought 'well, I guess I'll have to do it.'" During the last race of the day, he changed his approach to the jump and went off without enough speed. He came up 10 feet short of the landing, and was also leaning to the side a bit so his tires did not

land evenly on the ground. He did not fall off the bike, but the awkward landing angle sent an excessive amount of force through his leg as it was in contact with the foot pegs, and he broke his ankle. He said he heard a loud pop from his ankle, but didn't think it was broken until he got back to his truck and tried to weight bear through his leg. A friend drove him to the hospital where doctors informed him that he had fractured his left ankle, and it required surgical fixation. Cody reported six months passed before he began to feel more normalcy in his day-to-day function, but he was still experiencing a lot of pain. Doctors decided he needed a second surgery to fuse his ankle bones together, so roughly one year after his crash he received an ankle fusion. Cody's fractured ankle, requiring multiple surgeries – one being a fusion that limited his ankle mobility and function for the rest of his life – has not deterred his desire to continue participating in recreational motocross.

Derick

Derick had a long history of recreational motocross participation, along with an extensive list of significant injuries. Tearing his ACL, MCL, and PCL in his knee, all requiring surgical repairs, had been his most significant injury. Most of the significant injuries explained by the participants of this study involved jumping their dirt bikes. Derick experienced a different situation. While riding through a muddy corner, Derick's rear tire lost traction and the back end of the bike slid out from beneath him. Motocross riders often lift their inside foot off of the foot pegs and use the weight of their leg to help balance the bike as they lean into a corner. As the back end of Derick's bike began to slide out, he put his foot on the ground to catch himself. His foot forcefully stuck to the ground as his momentum continued forward, causing his knee to bend sideways. The abnormal knee motion caused him to tear several ligaments, and he fell to the ground. He tried to stand but quickly fell because of the instability and pain in his leg. After

going to the hospital, the doctors advised him to return five days later. They were unable to do any testing or imaging because his knee was so swollen and inflamed. Upon his return the doctors informed him that he needed emergency surgery and was rushed to the operating room. He woke up in a full leg cast. He trusted his doctors to help him heal, but he admitted he had to make several visits to recast his leg as his casts continuously cracked due to walking, and other activities he was advised not to do. The final cast was removed several months after his initial injury, but he continued to limp for over a year. One day while walking down a hill at the beach he lost his balance, and as he began to fall his knee bent further than it had since his injury. He believed that incident broke up a lot of scar tissue because although it came with a lot of pain, he noticed significantly more range of motion a couple of days later. Through his rehab he noted his knee would not be as painful if he drank a beer or two, so being a little tipsy helped him do more activity and “work it out” more. Despite the emergency surgery, pain, and loss of function for a prolonged period of time, Derick explained his participation in recreational motocross has been the “only constant” in his life over the past five decades. He returned to riding recreational motocross six months after his surgery.

Themes

From the six participants, several themes were identified to explain their motivation and characteristics of self-directedness while rehabilitating their significant injuries. Such themes included getting the most out of life, social forces to quit from outside the sport, friendship and camaraderie, feelings of accomplishment, special intrinsic sensation, desire to have fun, responsibility for injury and rehabilitation, sought information, fearful of reinjury, why do I want to keep doing this, and changing their strategies within the sport.

Getting the Most Out of Life

Four participants specifically desired to get the most out of life, and it was understood that motocross helped fulfill that sensation. Tucker said, “It makes me feel alive” while discussing the benefits of motocross. To get the most out of their life, participants did not want to feel stifled by fear and they wanted to experience the process of success and progression through difficult tasks. Tucker often revisited the idea of getting “one shot at life.” Participants continued their participation in recreational motocross after sustaining a significant injury in part to realize extrinsic desires that they have integrated into their self-fulfillment.

Thoughts of not wanting to regret opportunities as they arise were contemplated as Tucker stated

As I get older, presumably the window of riding gets smaller. There will be an age I get to where I won’t be able to ride, so it does feel like a little bit of urgency. And the sense of “I want to ride.” I would rather ride now than wish I had when I was in my fifties or sixties and regretted it.

When given a moment to reflect, Tucker reverted back to this sentiment by stating, “This comes back to my perception of ‘you get one go at life, so how do you want to spend it?’ What is important to you? What do you enjoy doing?” This thought process was evident when he contemplated new perceptions of his participation after his injury. He did not struggle to alter his approach to the sport because his participation gave him a unique sense of feeling alive and, as he stated, “I choose to live.” Other activities outside of recreational motocross may also satisfy his desire “feel alive,” but he understood what motocross can provide for him. He had chosen to continue his participation to regulate an integrated sense of extrinsic motivation.

Cody believed recreational motocross can provide certain life fulfillments as he recognized the sport provided opportunities for character development, which he deems valuable. “There is so much to learn and work towards, but you’re also working on non-motocross skills,” Cody said. He explained recreational motocross to be rich in opportunities to practice certain character development. Noting the importance of goal setting, hard work, and facing adversity, he stated. “It’s good to set goals and learn how to work hard toward those goals. You got to learn to find a way when things are hard.” Recreational motocross allowed him the opportunity to build these skills and experience valuable lessons that can be applied to other aspects of life. Not only did he believe the sport can provide opportunities for character development, but he recognized similar value in his experience of injury rehabilitation. Cody was asked what he hoped others could potentially learn from his experience of injury rehabilitation and returning to recreational motocross. He responded, “There is a lot of character development from the sport. Don’t give up. Don’t be afraid to start over. Build yourself into what you want. Accept the pain, and the long process.” Cody portrayed a sense of valuing the life lessons that were learned from his participation in recreational motocross and injury rehabilitation. Such are lessons that other recreational activities may not provide.

Joe explained similar beliefs when he discussed the lifestyle motocross had built for him. His perseverance and work ethic in other aspects of life and through his injury rehabilitation were credited to his experience in recreational motocross. Joe stated,

It develops so many amazing qualities in a person. Especially the perseverance. I would say motocross gives a lot of perks. It’s led me to being the person I am and persevering through this injury. [In motocross] you’re by yourself. You’ve got to find the motivation

within yourself to go out and want to win and want to catch the person in front of you.

That develops a lot of good work ethic, as well.

The character development that motocross had provided Cody and Joe was not lost on them.

They recognized the value of their participation in the sport and have since applied the lessons learned to other aspects of their life.

On multiple occasions, Derick noted the influence health, nutrition, and exercise has on his life. He mentioned his value of feeling healthy while maintaining healthy habits. Being conscious of his health fulfills personal desires and life goals. He explained motocross helps him maintain certain health-related goals. Recreational motocross has “been a very major centerpiece of my life,” regarding his physical health decisions. He explained, “My whole lifestyle is based on this sport. My desire to stay physically fit, my desire to eat healthier, maybe drink less. It’s all tied to my performance and my ability to perform on the track.” Recreational motocross is the “central hub” for Derick to base a significant amount of his health goals. Without motocross, Derick may find himself lacking motivation to maintain a healthy lifestyle. During his rehabilitation he understood his participation in motocross helps fulfill life goals outside of the sport.

Social Forces to Quit from Outside the Sport

Participants did not receive positive support from those who do not actively participate in the sport. Each participant mentioned multiple people in their life suggested they quit their participation in recreational motocross, especially during their rehabilitation. The commonality being those who suggested the participants leave the sport were not actively involved in the sport. Several examples of friends and family members trying to influence their exit surfaced. James recalled several family members coming to the hospital to see him when he ruptured his

spleen, but also to support his wife and child. Most family members questioned his decision making, called him irresponsible, and suggested he quit the sport. During his stay in the hospital, James noted, “When family would come check in, they would always say things, like, ‘you need to give that up,’ and questioned my decisions. Everyone seemed to ask why I was even doing that.” James understood their viewpoint, stating, “I mean, I get it. They don’t understand the sport, and just see me laying in the hospital instead of being with my family.” But he received the same messages while recovering from each injury he’s sustained from his participation in recreational motocross, before, and after his spleen injury. The lack of support for his participation from his family and friends outside of the sport did not cause him to discontinue his participation.

Tucker made quick mention of not having much social support from those outside of the sport. Speaking about the feelings of friends and family who do not participate in recreational motocross he stated, “Obviously everyone who is not my wife would prefer I didn’t ride dirt bikes. She just trusts that I’ll use my best judgement.” On multiple occasions he expelld his beliefs of recreational motocross being an individual, and often a selfish endeavor. Tucker explained,

The whole venture of motocross, for me, has always felt like a little bit of a selfish activity. You go to a track, it’s just one person on one bike, and whoever comes along with you, unless they’re also riding, they’re just kind of sitting around. So, I’ve always felt like the pursuit of this activity, for me, has always been somewhat of a lonely venture, anyway.

The trust his wife had in him helped Tucker make the decision. Influences from others not involved in the sport were minimally considered.

Joe also noted people who did not participate in recreational motocross continued to question his decision to ride again after his injury. He recalled friends asking, “Why the hell do you want to do that after getting paralyzed?” As he explained his thoughts towards those who are not involved in the sport, he stated, “Them not understanding the sport and understanding the lifestyle that it brings is the reason why 95% of the friend group is from the moto community.” Both Tucker and Joe chose to focus on the influence from those who are immediately involved in their recreational motocross participation, such as Tucker’s spouse, Joe’s parents and grandparents, plus friends who are actively involved within the sport. They acknowledged the intrinsic fulfillment they receive from being active in the sports’ social context.

Cody agreed that negative social influences toward his participation in recreational motocross existed during his rehabilitation, but he chose to not let it affect his decisions to continue riding. He admitted people told him he needed to stop riding, that he should quit, and he is going to keep hurting himself if he keeps getting on his bike. Some family members had previously attempted to convince him to quit motocross during earlier injuries, and now rarely mention anything of the sort because they see their efforts as “a lost cause, or they know better. They know I’m not going to stop riding.” Cody chose to focus on support within the motocross community, and not let others affect his decision to re-enter the sport.

Andy bought his first bike as a teenager with his own money and entered the sport on his own. His parents never agreed with his participation in recreational motocross, and actively oppose his continued involvement. “They’ve been against me riding since day one,” Andy said. “Especially when I’m laid up after a crash,” they specifically expressed their feelings and disapproval. He explained it is easy to not let their opinions influence his decision to continue riding motocross because he initially entered the sport against their guidance. Andy understands

each day participating in motocross is an act against their wishes. Choosing to continue riding after rehabilitating his injury did not feel like an act of defiance, or a novel family dynamic. He had never allowed their negative influences to determine his decisions regarding motocross, so there is not much effect when applying the same perceptions to his experience with injury rehabilitation.

Friendship and Camaraderie

Participants found positive support and a desire to return to the social context that recreational motocross provided from their peers within the sport. Each participant provided examples of friendships and camaraderie influencing their recovery and their motivation to continue participating after their injury. A stranger came to Tucker's aid after he crashed. The stranger immediately checked on Tucker, then helped him gather equipment into Tucker's truck so he could go home. This man also reached out to Tucker on social media after a few days to check on his status and made sure he was okay. It was a small gesture, but Tucker appreciated the positive support, stating, "It was nice to have that support and to know someone was checking in on me." Cody stayed in touch with his motocross friends during his rehabilitation. They helped him stay positive through his rehabilitation and feel involved while he is absent from the sport. Cody explained, "I texted my friends when I know they went riding to see how it went. I still like talking about what the track was like, and how they did, and stuff like that." Periodically, Cody attended local races when he knew his friends would be there. He liked "hanging out around dirt bikes and my buddies." The desire to feel connected to his peers from within the sport helped motivate him to continue his rehabilitation and participation in motocross. James explained, "Moto guys are always there for each other, especially through injuries. I've always tried to be there when my friends got hurt, and I know they are going to do

the same for me.” He continued, “Getting through injuries is easier when you have people who understand what you’re going through. It’s easy to come back when you know they’re still there.”

The majority of the social influence came from enjoying the time spent with friends while actively participating in recreational motocross. Most participants missed hanging out with their friends within the sport while they rehabilitated their injuries. Dirt bikes gave Cody and his friends a reason to get together. When recalling a conversation with a friend, Cody explained,

We’re hanging out. We’re going to hang out with our friends, and the dirt bikes are the reason we’re hanging out. We don’t race for anything. It’s not, like, it’s a career or helping us get paid, you know. So, it’s just more of a reason to go hang out with your buddies. It’s hard, you know, the older you get to make time for things. So, this gives us a purpose to go hang out. and that’s kind of nice.

Due to the format of practice days at his local motocross tracks, Cody noted, “We’re hanging out more time than we’re riding. You know, you have a grill, or you can just sit there and, kind of, be with the guys. You’re actually doing that more than actually riding a dirt bike.” Cody appreciated the social environment recreational motocross gave him while also enjoying the sport.

James valued actively participating in recreational motocross with his friends, time spent with his friends at the track when they are sitting around waiting to ride, as well as simply talking about the sport with his peers. He stated “It’s not just the riding, or the thrill. It’s the hanging out and bench-racing type of thing. So, I didn’t really want to give that up, either.” James mentioned multiple times that motocross had built some of the strongest relationships of his life, as he explained, “I’ve been around a long time, made a lot of friends, some of the best

friends I have are from the track,” and “those are the best friends I have.” He believed leaving the sport of motocross would cause him to lose a huge connection to his contextual environment. “On days I don’t ride well, or do bad in a race, seeing my friends and the people I’ve gotten to know out there is still worth the time it takes to load everything up and go to the track,” he explained. Even if he’s frustrated about his recent performance while riding his dirt bike, he had always appreciated the community and social context that comes with participating in motocross.

Andy was greatly motivated by annual trips to ride dirt bikes with his friends. They planned a big trip every year during the month of March to ride their bikes. Andy fractured his jaw roughly five months before his annual trip. His friends gave constant encouragement and positive reinforcement with the hope that he would be able to heal in time for their trip. When discussing his friends’ support, Andy said, “Everyone made sure I got what I needed for the trip. They’d check in on me to make sure I’d be ready to go. It was cool they kept asking if I thought I’d be ready.” Andy thought he would miss the valuable time spent with his friends the most if he was not able to go because of his injuries. He mentioned, “I was glad I healed up and got to spend that time with those guys.” He missed the camaraderie of recreational motocross during his rehabilitation. Potentially missing out on a fun experience with his friends showed just as much influence on his rehabilitation as missing out on the opportunity to ride.

Tucker believed he was missing out on valuable life experiences and social connections when he was rehabilitating his injury. He mentioned, “There were sensations of missing out when I knew others went to the track.” The social aspect of the sport largely factored into his continued participation. Tucker admitted to skipping opportunities to ride if his friends are unable to join him on a particular day. “Anymore, I usually won’t ride if I’m not with some friends, or if my wife can’t go with me,” he explained. This was also partly due to a safety

concern. “I don’t want to crash and not know anyone there. I’m more scared of that since the concussion.” Other riders were at the track the day he sustained his concussion, but he did not personally know anyone on that day. Potentially injuring himself without a friend there to help him out made him nervous about riding alone in the future. Tucker noted that his enjoyment of participating in recreational motocross is significantly greater when he feels closer to those who also participate. “The people I choose to ride with are of like-mind,” he said. He looked forward to riding when given the opportunity but catching up with peers in the motocross community and meeting like-minded people was a point of emphasis when discussing motivational factors during his injury rehabilitation.

Feelings of Accomplishment

The desire to feel achievement and skill progression kept these participants motivated to return to the sport during their rehabilitation. Each participant had raced locally, and most had attained a relatively significant level of success in their race experience. However, no participant mentioned the racing aspect when discussing their most valued achievements and progressions within the sport. Instead, what drove these participants were personal marks of progress.

Overcoming the challenges of the sport, completing difficult obstacles on the track, and facing fear provided James the highest feelings of achievement. He explained, “I’ve won some races and won some championships. I’ve tried to be competitive and beat certain guys and win trophies. I’ve done that. It really doesn’t mean anything to me anymore.” James said he had observed bikes getting faster, tracks getting bigger, and jumps getting more difficult throughout the years of his participation in motocross. The challenge associated with the sport had amplified. He noted a greater sense of accomplishment clearing a big jump for the first time or when he felt small skill progressions on tricky sections of a track. As he thought back to

rehabilitating different injuries, he recalled missing the feelings of achievement, referencing “the feeling of hitting a big jump, or especially working on a new jump.” Personal goal accomplishments, such as minor progressions in bike skills, were of significant influence.

Cody identified a similar description of accomplishment. The challenge of motocross was Cody’s biggest motivator for his continued participation, leading to high levels of personal achievement. In an attempt to explain his feelings during moments of achievement and motivation, he stated,

It’s hard to explain to somebody that hasn’t done it before. But it’s like you hit two corners really good, or you hit a big jump, and it’s just a feeling you can’t really explain. And you cannot get it anywhere else. It’s addicting.

He was an experienced racer, but his motivation to continue recreational motocross did not come from external awards or the desire to prove he was better than other riders. He viewed motocross to offer an immense challenge that he enjoyed undertaking. This challenge provides him a unique sensation that he cannot find elsewhere. This sensation was the mental and physical challenge in combination with intense execution and accomplishment. When asked to explain what aspect of the sport provided such a sensation, he said, “you’re doing a thousand things at once. It takes so much work to get to where you’re decent. You’re working in every single corner. Every single lap you can be trying something else or working on getting better.” He also noted the sport can provide feelings failure because of its difficulty. As he continued to describe ample opportunities to practice certain skills, he expressed it sometimes caused negative feelings because “it’s never good enough. It could always be better. There’s always a challenge to chase.” Mistakes in this sport can lead to significant injury, pain, and loss of bodily function. The challenge felt from participating in motocross, which provided Cody his greatest sense of

accomplishment within the sport, is the same incentive that increased his risk of sustaining significant injuries.

Special Intrinsic Sensation

A common occurrence across participants who returned to recreational motocross after rehabilitating a significant injury was the idea of motocross providing a unique sensation that participants had not been able to recreate with any other activity. Most struggled to verbalize where that exact sensation originates. Cody stated, “It’s hard to explain to somebody that hasn’t done it before,” and “it’s just a feeling that you can’t really explain, and you cannot get it anywhere else.” Derick shared similar thoughts, saying, “It’s so powerful, I can’t even explain it.” James also revealed, “It’s hard to explain unless you’ve done it. It’s hard to explain why I love it so much because I also think it’s the most dangerous sport on the planet.” Joe explained, “There’s no other feeling in this world like being on the bike,” and “there’s just no other feeling like it.” Joe mentioned he had searched for the feeling elsewhere. He stated, “I’ve got into side-by-sides and different [activities] like that, but there’s just not anything comparable to the feeling I get being on the bike.” Andy mentioned the desire to fulfill a unique feeling when he explained “I don’t get this feeling anywhere else. And it almost seems like I have to keep doing this. I want to feed that feeling.” Tucker’s thoughts aligned with the rest of the participants. He noted, “I think there’s a feeling that you get with it [motocross] that I can’t seem to find elsewhere. I just think it [motocross] gives something really special in that regard.” Each step of their experience, the decision-making processes, actions through rehabilitation, and ability to resume their participation in recreational motocross after sustaining a significant injury was grounded in a strong and special internal sensation.

Desire to Have Fun

The core of their motivation to rehabilitate from significant injuries and resume their participation in recreational motocross was credited to the participants' desire to have fun. Every participant felt a sense of fun that is hard to replicate with any other activity. Recreational motocross provided challenges, a social setting, and other intrinsically valued elements. A few of the participants commonly used the word "fun" to explain what drove them the most to participate in such a risky recreational activity. Joe simply stated, "it's all for fun." Cody further detailed, "You know, I'm here to have fun. I still want to get better, but the goal isn't to go as fast as possible. The goal is to enjoy the day." Andy compared motocross to other recreational activities, explaining, "I've tried car racing. I still do that for fun, but it just doesn't have that thrill. It's not the same. It's not as fun." Motocross provided James fulfillment through multiple avenues but ultimately delivered a sensation of fun, stating, "It's my preferred way to work out. It's a good way to exercise. It's challenging, and it's fun. It's just a lot of fun being out there." It was understood that recreational motocross provided the participants with an opportunity to fulfill several intrinsic desires. The craving for its unique sensation and fun drove their motivation to continue their participation after rehabilitating a significant injury.

Responsibility for Injury and Rehabilitation

The participants understood a relatively long process of rehabilitation was required before they could ride again, but they took responsibility for their progression through that process. The sense of responsibility for their rehabilitation is tied to their unique view of injuries in recreational motocross. Participants noted, "It's not a matter of if, but when you get hurt" (Andy), "it's inevitable" (Joe), "I can try to be as careful as possible, but I know crashing and getting hurt is just part of the sport" (Derick), "it's part of the game" (James), "this happens, and

I know it's going to happen. I get injured" (Tucker), and "the risks are evident, even just watching people ride. You know what you're getting into when you get on a bike" (Cody). Participants took responsibility of their injury and rehabilitation process. The participants undertook responsibility through most aspects of their experience.

Some of the injuries were a response to factors seemingly outside of the participants control. Andy explained,

The bike cut out going up the face of a jump. It went wide open at the very top of the jump then died. The front end was already in the air, so it stood the bike straight up in the air before shutting off. I remember falling off the back of the bike in air, and the next thing I know I woke up in a hospital bed.

Despite his bike unexpectedly shutting off as he took off from a jump, Andy concluded that he was ultimately responsible for his participation, the bike's function, and his re-entry into the sport after his rehabilitation. Andy stated, "It was my call, not the bike's fault." He quickly explained his bike was his responsibility. He did not blame anyone or anything other than himself for his crash.

Joe admitted other riders ultimately affected his position on the track and factored into his crash, but he never blamed anyone other than himself for his injury. He explained, "I understand that it's obviously part of the sport. That's part of the risk we take. That's kept me from putting any blame on that specific scenario. If anything, it's all on me." Despite mechanical issues causing a crash and injury, Andy never wavered his responsibility or desire to continue riding. He also explained, "It's part of motocross. I know things can happen at any moment." Tucker understood part of the enjoyment of motocross for him was developing better bike skills and going faster. However, trying to get better at the sport may eventually result in crashing. He

explained not all crashes result in injuries, but “eventually it’s likely to happen. Anyone who rides long enough will get hurt at some point.”

Derick noted an extensive list of injuries he had suffered over many decades of participation in recreational motocross. He described his trust in doctors and the injury healing process has, in part, come from “all my other injuries and rehab’s. I know I’ll eventually get better and be able to ride again.” He understood permanent physical damage to be possible, stating, “I know I’ve been lucky to have so many injuries and not have anything too serious have happened, but I really don’t go crazy on the bike.” He did not enjoy being injured and approached the sport with a conscious effort to minimize risk, but noted “when I was younger, I always believed I would heal from just about anything that could happen, so I never saw myself giving up riding because of any fear.” His previous significant injuries had caused Derick to be more mindful of injuries and reducing his risk, but explained any shift in approach to recreational motocross was also due to him being in his sixties. He was concerned for his body to heal as quickly as it used to.

Sought Information

Participants took it upon themselves to identify resources that facilitated their rehabilitation. To do so, they needed to understand the extent of their injury. Participants then sought formal and informal medical care. Tucker explained “My wife is a registered nurse, so she kept a close eye on me and my symptoms.” Tucker utilized his wife’s resources when deciding if it was safe to take a nap once he returned home after his crash:

I remember saying I’d feel a lot better if I take a nap. My wife wasn’t sure if that was a good idea immediately after a concussion. She has a bunch of books she uses for work at our house, so she did some reading and thought I’d be okay.

He sought research online, stating, “I found some recent research saying it’s fine [to nap] after so much time has passed and you’re not exhibiting any unique symptoms.”

Participants researched doctors and medical facilities to find what they believed was best for their particular experience. Derick explained, “I’ve seen a lot of specialists for my injuries over the years. Now-a-days, it’s pretty easy to look online for knee or shoulder specialists and choose a place to go.” He also explained, “I’ve had plenty of friends get hurt in motocross. It’s easy to ask them about injuries and what doctors they went to.” Not only were peers utilized, but so were informal relationships with health care providers to acquire information. Derick has developed relationships with doctors and physical therapists over the years that he can “call and pick their brains really quick if I need to.” Derick used a friend who works as a physical therapist to “ask about injuries and exercises I can do. Or, sometimes, he can refer me to a doctor.” Cody trusted his friends with professional medical history when he sustained his injury. Immediately after his crash causing his ankle fracture, Cody said,

I wanted to go home. I took my boot off, myself, and there was a big bump on it. But my friend, who did medical training and work in the Army, he was freaking out about it because he was afraid I was going to lose blood.

Cody was convinced to let his friend drive him to the hospital. He trusted his friend’s medical opinion and concern for the situation.

Fearful of Reinjury

Participants reported thoughts of not wanting to get seriously injured again while recovering from their significant injury. Tucker acknowledged, “I didn’t like the way I felt [after the concussion], and I certainly didn’t want to do it again.” He spoke about research of long-term

effects of concussions and noted “sometimes the worst symptoms don’t come until years later.” He then added, “The long-term effects to your brain probably scare me the most.”

James referred to a newfound fear after his most recent significant injury multiple times, stating, “Fear is definitely a factor. It’s been bad, now, after this last injury. I’m very fearful and I don’t even know if I want to keep riding, to be honest with you.” He had returned to riding since his most recent significant injury but still acknowledged the fear of injury weighed on him. However, not all aspects of motocross caused James that sense of fear. He explained “Jumping is my biggest fear, now.” He believed the fear was affecting his enjoyment of the activity, saying, “It’s not fun to go roll around and not do the jumps. Especially when I know I’ve cleared them plenty in the past.”

Andy noted feeling a fear of reinjury throughout his first few times riding again after he fractured his jaw. “There’s always that fear in the back of your mind that the next time you get on a bike you may do the same thing,” he said. Derick noted a similar fear, but expanded on it, saying,

I’ve really adjusted my attitude a lot. I’ve gone from, you know, fearless and invincible, to, “okay, I’ve been hurt enough times now.” I don’t want to go through that anymore. And I don’t like the recovery. I don’t like the cost. I don’t like being away from it. And what I’m really scared of now is my age. One more big one and that’s it. I have to walk away. I’d be an idiot to not be done if I broke my femur, or something like that. Whatever the connection is, like the psyche of it, is so powerful. I can’t even explain what I’ve gone through to be able to ride this many years, this late in life.

Fears of reinjury were noted, but those feelings during their injury rehabilitation led the participants to reflect on their future participation. These motocross participants may not be

surprised that injuries accompanied their extreme sport, but they did not express any enjoyment from being injured. No one looked forward to it or enjoyed the process of injury rehabilitation. But participants' fear of reinjury influenced them to reflect on their experience.

Why Do I Want to Keep Doing This

Participants often began reflecting on their participation in recreational motocross quickly after their significant injuries. James recounted thoughts of “what am I doing here?” while lying in a hospital bed with a ruptured spleen, with his wife also in the hospital getting ready to give birth to their child. During his most recent significant injury, James' reflection continued throughout his rehabilitation process, as he noted, “I have other things going on in my life, and those things go on halt if I'm laid up. I didn't know if I wanted that again.” Tucker explained he had to consider if “brain injuries were worth it.” During his recovery, he contemplated with himself that “maybe I can just do what I perceive to be the easy, low risk obstacles. You know, smaller jumps and refrain from doing anything that I felt like, you know, took skill to complete.” Cody admitted, “It's never been a thought in my head to quit riding. I might not ride for a while, and I'll need to be smarter on the bike, but I never thought I'd quit for good.” Derick has experienced multiple significant injuries through several decades of participation. He explained each injury resulted in varying levels of self-evaluation and behavior modification, but expressed each injury quickly reminded him that his personal goal in motocross was to ride as long as possible. “I want to ride as long as my body allows me to” and “I don't ever want to stop riding” were noted multiple times by Derick. Accomplishing that goal required him to stay healthy and avoid injuries. When speaking to a friend about their approach to motocross he inquired, “Do I want to ride for a long time, or do I want to be blazing fast and go out in a big pile of smoke? That's how I look at it.” Derick also noted his friend got hurt while riding motocross a couple of

weeks after their conversation. He reminisced, “And that was it. He had to sell everything. He was done. I look at it, like, I’d rather ride for as long as I can.” Joe’s paralysis was so severe that he initially considered his participation in motocross to be over. He explained, “It wasn’t until I saw that video of Barry that I thought it was possible.”

Participants’ goals in recreational motocross and general philosophy were contemplated and ultimately factored into their new perceptions of participation and behavior modifications. Each participant relaxed their goals of participation while rehabilitating a significant injury. Tucker stated before his concussion, “I was actually trying to get faster by pushing myself, taking the lap times, going to all of these different practices.” After his concussion, his reflection is captured in this statement:

When I got that injury, that’s when I said, “okay, well, why am I really out here? Do I need to go faster? Do I need to be able to clear all of these jumps or obstacles? What is this for?”

He knew he would keep riding motocross, but he was also hypersensitive to the risk of injury within motocross and contemplated participation methods that could potentially reduce his risk of injury in the future. He worked to identify factors that he could control, such as “I can be more cautious when I’m feeling tired, or my arms are pumped up. I don’t need to stay out there if I can’t hang on anymore.” He then contemplated aspects that could potentially led to crashes that he does not have as much control over. Tucker noted, “I have no problem letting other guys go by me at a random practice day. I don’t need them slamming into me or cross-jumping me.” He also explained, “I’m usually good about making sure the bike is ready to go before each ride, so I’m never too concerned about bike issues.” He consciously examined what his best course of action was in relation to his overall participation in motocross while decreasing risk of reinjury.

James questioned his approach to the sport after each significant injury, while adding factors outside of motocross helped shape his self-evaluation. Depending on the stage-of-life he was in during his injury rehabilitation brought unique factors to influence his thought process. While lying in the hospital with a ruptured spleen as his wife was preparing to give birth to their child, he admitted, “I let my family down. I shouldn’t be in this bed.” He ultimately took responsibility for his crash and injury; however, he imagined the bike he was riding at the time may be too powerful for him, stating, “If I didn’t have this overpowered machine this might not have happened.” Then, “about two weeks after I was out of the hospital, I sold that bike and went down and bought a brand-new Yamaha 250.” He never contemplated completely giving up the sport during that rehabilitation process.

In the past year, James had a crash resulting in broken ribs and a collapsed lung. He not only contemplated what he did wrong, saying, “There was probably no need to jump that tabletop as I was just getting on the track,” but he also considered leaving the sport because of his fear of injury moving forward. He stated, “I had plenty of thought of ‘do I even want to do this anymore?’” “The rib injury was the first time I really thought about being done,” and “these injuries just never seemed to affect me like this last one did,” he said. He was more confident that he would heal when he was younger. The pressure of trying jumps that he did not feel comfortable attempting scared him the most when contemplating his participation while he was recovering. He rationalized, “I know I could roll over the big jumps, but that hardly seems worth it. And I’d probably just get landed on, anyways.”

Changing Their Strategies Within the Sport

Learning was required throughout the rehabilitation process and returning to recreational motocross. Rehabilitating his injury and returning to the sport required significant bouts of

learning for Joe as he endured significant functional limitations. He spent several weeks in a rehabilitation hospital to learn how to navigate life being paralyzed and confined to a wheelchair. After being released to go home from the rehabilitation facility, further practice and development of functional skills was needed before he felt comfortable with his basic daily activities. He began to seek out new information during his stay at the rehabilitation hospital. He saw a video of Barry, a notable motocross rider from California, who was also paralyzed from the waist down due to a motocross crash. Barry had modified a motocross bike to accommodate his injury and was able to ride with skill and speed. “It was a no brainer. As soon as I saw that video I knew it’s what I wanted to do,” Joe stated. He contacted Barry to discuss his injury and potential to continue riding motocross. “So, I got a hold of Barry, and I went out to California six months after my injury, and I rode his bike. And then it’s just nonstop from there.” Joe’s time with Barry was spent

“learning a proper technique for setting the bike up because the bikes are engineered to react to breaking bumps and other obstacles on the track as well as it possible can. When you start adding bars, and weight, and a cage, and a seat, and all the stuff I needed to the bike it changes the geometry. You got to make sure that you’re keeping the weight in the proper places. You want to keep the bikes reactions as normal as possible. So, that took a lot of me digging into Ricky’s head, to know exactly why he set his bike up the way he did. Seat positioning and suspension is huge. And it’s really tricky. I needed to understand as much as possible because I was going to bring all of his knowledge back home to the people that were going to be setting my bike up.”

Roughly one year after his injury, Joe strapped into his new bike for its first test ride. He was not on a motocross track. He was in a parking lot testing what the bike felt like through

accelerations, braking, and cornering. As he prepared for the first test ride, Joe admitted to feeling uncertain and nervous. However, his hesitation was not as much in fear of injury, but more uncertain about the performance of the bike. He explained his thoughts leading up to the first day back on the bike:

Initially, it was just the uncertainty of balance and how well I was going to be able to go through corners again and different things like that. Just the balance of the bike was the biggest thing I was unsure about. Outside of that though, I was super excited. Just the fact that I realized I wasn't going to have to give up the sport that meant the most to me.

Joe quickly felt comfortable on his new designed bike, stating,

When I initially got strapped in and took off for the first time I was surprised. It was a little bit mind-blowing, I mean, of how easy it really was. As long as I'm able to carry just a mile an hour of momentum, I can do whatever I want with the bike. At that point, I'm just putting around in the parking lot of the track. But I was able to truly maneuver the bike and do about anything I wanted to do with the bike.

He felt comfortable enough with his initial attempt riding the bike that he thought, "I might as well go jump on the track and check that out as well." He quickly learned what he was capable of doing, and new challenges he would face while riding with his new bike setup and paralysis. He explained,

For the most part on the track went well, as long as I could avoid super sharp corners with deep ruts. That's I found a lot of issues. But as long as it's a good sweeping corner and more of a berm-style rut, not a full-blown, deep rut, I can ride it.

He was surprised how comfortable he felt on the track, but he knew he had to adapt several new strategies and techniques to be successful, efficient, and safe on the bike. It is common for

motocross riders to lift their inside leg off the footpegs and extend their leg toward the front of the bike to help counterbalance its weight through corners as they lean into a rut or berm. If they begin to tip over in a corner, they can also plant their foot on the ground to catch themselves to avoid crashing. This is known as “dabbing a foot.” Joe mentioned, “The biggest struggle is longer, deep ruts through corners. Not being able to dab a foot or put a foot out or anything like that to try to catch myself makes it hard.”

The ergonomics of the bike played a large factor in learning how to successfully clear jumps. When asked about relearning how to jump, Joe said, “A lot of that was the seat positioning and figuring out the suspension.” Not only were the bike reactions crucial to learn, but so was his own body positioning, reactions, and throttle control. Not being able to use his legs to adjust the bike meant he needed to find other ways to maintain control. Joe explained,

I have to be on the gas going off the face of a jump just to prevent endoing [front end of the bike excessively pitching downward causing a crash]. I had to learn how to stay on the gas enough to keep the front end from diving, but also how much to let off [the throttle] enough so I’m not going to completely flatland it. Learning to judge that over different types of jumps was difficult. But the seat positioning and suspension is big, as well.

Typical motocross bikes have a clutch lever on the left-hand side of the handlebars, front wheel brake lever on the right-hand side, the throttle is controlled with the right hand, the rear brake lever is controlled with the right foot, and the gear shifter is controlled with the left foot. Without being able to use his legs and feet to slow the bike down or to shift gears, adaptations were crucial, but difficult. He said,

My very first build was kind of a mock-up garage build. I was stuck in second gear. I wasn't able to have a shifter on it. I had a clutch, and the motor was basically stuck in second gear. I couldn't shift. I had a hand break, which was very limiting.

That's the bike he continued to modify and ride through his first and second year back on the bike. After a couple of years, he met a man, Jared, who was able to help him progress his bike build. He explained,

I'd met an individual that was a really good fabricator. He had a lot of insight about how a bike should function on a motocross track. So, when Jared got involved with me is when we really made some changes. He was able to get a shifter mounted onto the bike. It was probably close to three years before I really felt comfortable and started hucking [big] jumps again and felt solid with my setup.

His injury history and current limitations within the sport have caused him to contemplate his approach to recreational motocross. He's learned to concede certain obstacles, such as long, deep ruts. This led to thoughts of safety and limiting risk while riding, such as

Now that I'm getting older and I've suffered a few other injuries I try to make sure I'm riding within my comfort zone more times than not. These days I limit my gate drops. There's just no reason for me to take the risk anymore.

He continued,

I try to be a little more mindful of track conditions and try to be more grounded within myself. It's all for fun, so I try to be more calculated and more thoughtful as far as trying to lessen the risk. And that's changed from, you know, before my injury. It was just "balls to the wall" all the time, no matter what. Even right after my injury and getting back on the bike. At first, I guess I was taking it easy but once we had a solid setup, I was

racing way more than now. I'd 100% much rather just go hit up a normal practice day and ride for fun and the love.

Joe is not the only one around his local area to ride recreational motocross while being paralyzed. Once a year a local track hosts an "adaptive race" for individuals who are paralyzed, or physically handicapped with an adaptive motocross bike. Joe competed in the adaptive race several times and said "that's pretty much where I stop with my gate drops anymore. I line it up with other paralyzed individuals. I'm on a level playing field and I guess my mindset is completely different at that point."

While Joe's injury and experience were remarkable, other participants demonstrated the process of learning and did not require the extensive alteration to their bikes and riding techniques in order to participate in recreational motocross after their rehabilitation. Participants noted various shifts in their mindset when analyzing their goals within the sport. Learning and altered perceptions of their participation were responsible for their behavior change. Improving longevity of their participation and reducing risk of injury was continuously acknowledged, but implementing strategies to fulfill these shifts in perception would take practice. During his rehabilitation, Cody stated he was aware of wanting to take less risk whenever he was able to ride again, but he could see himself wanting to continue to push himself once he is on the bike.

After big injuries there is a shift in mindset, like, I'm not doing this for a career, and I want to continue doing this. I can't keep doing this if I keep getting hurt, so let's find a way to do this without getting hurt. But then you get back on the track, and things start getting better, and you're shaking that rust off, and you're like, oh, my gosh! I'm having a good day, and you just push it, and push it, and push it.

Through years involved in the sport and a history of injuries, Cody knew practicing strategies to reduce his risk of injury would take a considerable effort, albeit crucial to do so.

Both Andy and Tucker felt various levels of nervousness and anxiety as they prepared to ride for the first time after their injury, but also a considerable amount of excitement. Andy explained feeling “somewhat sick to my stomach” as he drove to the track for the first time after his rehabilitation. He admitted, “It’s the same thing as feeling like the nerves make you want to puke.” As soon as he was on the bike again, he explained, “It was just excitement. And it felt easy.” The nervousness of riding and any anxiety of getting hurt again vanished and he only remembered feeling excited to be riding again. Although he reportedly felt “rusty” with certain techniques, Andy said, “I was surprised how easy it felt, and how quickly it all comes back.” He noted he wanted to go faster and resume his usual “aggressive” riding rather than focus on the safe strategies he told himself he would utilize. Tucker also mentioned that “it felt pretty normal pretty quickly” when he got back on his bike for the first time, but he forced himself to go slower and be very cautious during his first few rides after his injury. To maintain a cautious effort Tucker said, “I just kept telling myself to go slow and be safe; that it would be worth it in the long run.” He also mentioned he promised his wife he would be extra careful, so he felt a responsibility to her that influenced his behavior when first re-entering the sport.

Tucker continued to practice a cautious approach to the sport, but noted, “When you’re feeling good you want to push the pace because that’s part of the fun.” He continued, “There will always be sketchy moments, no matter how careful you try to be.” He detailed strategies to mitigate his risk. He said, “I was totally fine if I didn’t push it too much and if I didn’t try to go match my peers’ attempts at big jumps. That was definitely a mental shift.” He also noted, “I’m pretty cautious about riding with arm pump. That’s an easy way to make a mistake or get hurt.”

Participants noted experiencing arm pump in the form of hand and forearm fatigue, weakness, and numbness. Tucker explained arm pump was more likely to lead to mistakes, so he was cautious about minimizing any risks during those bouts. Several participants mentioned altering their efforts and expectations when they began experiencing arm pump. Cody explained, “It’s something you have to push through if you want to win.” However, a new perception toward his participation in recreational motocross led him to contemplate practicing new habits to reduce his risk of injury. One of which was to not force himself to ride aggressively when he was struggling with arm pump. “Now I’ll just back it down if it’s too bad,” he said.

Derick decided to enter himself in riding classes designed for slower riders on practice days when there are sometimes hundreds of riders at the same track. This helped him maintain a safer pace. He also noted a change from being hyper-focused on himself and doing what it takes to do the best he can while practicing, to being more aware of who was around him. He described, when riding motocross “it’s easy to focus on yourself and your lines, and what’s in front of you.” While he focused on staying safe and reducing his risk of injury he tried to be more “mindful of who is behind me, where they are, and trying to find a line that is out of their way.” Rather than strictly focusing on the next obstacle on the track, he tried to be more aware of what he needed to do to maintain his safety based on other riders and what they were doing around him. James agreed, suggesting, “Sometimes the safest part is just knowing where everyone is on the track and trying to figure out a good spot to either pass someone or let them by.” Tucker explained “If someone wants to go crazy at a practice day I’ll stay out of their way. I think I look around more, now.” Participants agreed that it is important to them and their own safety to know what other riders were doing on the track, where they were, and thinking about strategies to allow faster riders to safely pass them.

Chapter Summary

Participants' injuries ranged from concussions, fractured bones, torn ligaments, organ damage, and spinal cord injuries. Some participants sustained permanent loss of bodily function from their injuries. Some participants believed they were rehabilitated within weeks of their injury, others required several months. No matter the extent of their injuries, length of rehabilitation, or loss of bodily function, they all returned to recreational motocross at a level of participation that provided them fulfillment.

Several motivating factors aided their experience of rehabilitating a significant injury and returning to recreational motocross. The participants motivation was focused on themes of fulfilling intrinsic beliefs and desires, and social support. Specifically, they understood recreational motocross offered the feeling of getting the most out of life. Woven into this feeling was a special intrinsic sensation granted through their participation that they found difficult to explain to those who do not participate in motocross. The intrinsic sensation was unlike any sensation they received from any other activity in their life. Their desire to have fun and how motocross fulfilled that desire was commonly acknowledged. Participants shared similar experiences of people who did not actively participate in recreational motocross suggesting they cease their participation in recreational motocross. However, the positive support and connection to peers within the motocross environment was more influential to their participation status. Friendship and camaraderie were valuable motivations to their rehabilitation and return to motocross.

Injuries and its subsequence rehabilitation experience was unique to each participant, but common characteristics were evident. They took responsibility for their experience despite the circumstances of the crashes that led to their injuries. They did not shed any blame to external

conditions. They took responsibility for their rehabilitation as they sought information and worked to identify resources to facilitate their rehabilitation. Each participant exposed a fearfulness of reinjuring themselves, causing them to reflect and self-evaluate their participation. The awareness to reflect and evaluate their decisions led to significant evidence of learning and behavior change within their participation. The application of these characteristics and participants' motivation patterns will be analyzed and referred to previous research in Chapter 5.

Chapter 5 - Discussion

The purpose of this phenomenological study was to explore the motivation and self-directedness of recreational motocross athletes who continue their participation after sustaining a significant injury in recreational motocross. This chapter provides a discussion of the findings, implications for practice, research limitations, recommendations for future research and a conclusion.

Interpretation of Findings

The participants demonstrated self-determination and self-directed learning characteristics, which comprised the theoretical framework for this research. These findings support previous research and demonstrate the need for more support from injury rehabilitation professions to incorporate learning opportunities.

Self-Determination

The participants found motivation to successfully rehabilitate their significant injuries and return to recreational motocross from a vast arena of intrinsic, as well as samples of extrinsic, factors. Drawing from Deci and Ryan's (1985) SDT framework, participants demonstrated behaviors aligned with the three psychological needs of autonomy, competence, and relatedness to fulfill intrinsic motivation. Intrinsic values were the driving force behind their motivation throughout the phenomenon experienced. However, participants also demonstrated extrinsic motives. Deci and Ryan (1985) consider motivation to lie on a continuum with extrinsic motivation lying between amotivation and intrinsic motivation. Within extrinsically motivated behavior, levels of autonomy vary, placing one either closer to feeling amotivation or intrinsic motivation. Although participants described features of extrinsic motivation, they expressed high levels of autonomy within the extrinsic aspects.

Extrinsic Motivation

Along the continuum of self-determination, extrinsic motivation is divided into four types of regulation: external regulation, introjected regulation, identified regulation, and integrated regulation (Ryan & Deci, 2000a). Autonomy increases as one moves further toward identified regulation, with integrated regulation representing the highest form of autonomy within extrinsically motivated behaviors. Participants of this study identified with and integrated the values of motocross through their perception of the sport fulfilling personal life philosophies, character development, and healthy behaviors.

Identified regulation represents behaviors that are extrinsically motivated, but one personally identifies to its value (Ryan & Deci, 2000a; Ryan & Deci, 2020). Cody valued character development. Goal setting, hard work, and problem solving through adversity are skills and characteristics he believed are important to practice and develop to live a successful life. His quote “don’t give up. Don’t be afraid to start over. Build yourself into what you want. Accept the pain, and the long process” explains the value Cody personally identified with that motocross allows him to practice. “I learn these things in motocross, but they can apply to other experiences in my life,” he said. Cody also realized rehabilitating a significant injury allowed him to practice similar strategies. He was not intrinsically motivated to injure himself so that he would experience a lengthy, painful injury rehabilitation. Yet, he grasped the opportunity to continue practicing strategies he identified to fit his idea of life success. Although he was not able to ride during his rehabilitation, he explained, “I still have goals, and I still have to work hard. And it’s not easy” when he discussed his progress through rehabilitation. Perhaps decades of character development through recreational motocross participation equipped him to face the challenges of rehabilitating a significant injury.

Within integrated regulation, “the person not only recognizes and identifies with the value of the activity but also finds it to be congruent with other core interests and values” (Ryan & Deci, 2020, p. 3). Tucker made his intentions clear when he stated, “You get one life. You could never leave your house and have a quiet life, do nothing of note, be as safe as you think you can be inside your home. Or you can live. And I choose life.” Tucker continuously referenced this philosophy throughout each interview with quotes, such as “we all get one shot at life,” and “you get one go at life, how do you want to spend it?” Along with “you get one life,” “I choose life,” “you get the one life,” “you can choose to live your life on your terms,” and, finally, “you can use your life the way that you want to.” Tucker believed a fulfilled life, for him, included aspects of adrenaline, excitement, overcoming challenges, and fear. He recognized the value recreational motocross provides when he compared his personal values and ideas of life fulfillment. He used recreational motocross to integrate certain personal philosophies into his life. And he was not alone.

Derick desired to live a healthy life. Diet, nutrition, exercising, and physical wellness were of great importance. Part of his motivation to rehabilitate from multiple significant injuries was because of the value he believed motocross provided toward his idea of maintaining proper health through diet and exercise. Deci et al. (1994) described integrated behavior to be performed “wholly volitionally because of its utility or importance for one’s personal goals” (p. 121). Derick explained recreational motocross to be “a very major centerpiece of my life” in relation to his physical health behaviors. He used motocross to motivate him to exercise and practice a healthy diet. He explained his motivation to practice healthy behaviors was “all tied to my performance and my ability to perform on the track.” Physical health in the form of proper diet

and exercise were of utmost importance to Derick's idea of a happy and healthy life. He found value of integrating motocross to help fulfill his health philosophies.

Intrinsic Motivation

Instances of intrinsic motivation were abundant, seen through examples of relatedness, competence, and autonomy (Deci & Ryan, 1985; Ryan & Deci, 2020). Through their injury rehabilitation, different aspects of social support played different roles in participants' motivation to return to recreational motocross. Specific sensations of achievement and accomplishment motivated participants to rehabilitate and return to their sport. In addition, participants exhibited strong evidence of high levels of autonomy in their behavior and decision making throughout the phenomenon. Although proof of extrinsic motivation existed, ultimately the participants most often noted that intrinsic motivations influenced their rehabilitation and re-entry into recreational motocross.

Relatedness. Ryan and Deci (2020) noted those within learning environments that emphasized social relatedness demonstrated greater engagement. They explained "Relatedness concerns a sense of belonging and connection. It is facilitated by conveyance of respect and caring" (p. 1). This study identified relatedness as the desire to feel connected with one's contextual environment, providing a sense of belonging and togetherness. Feelings of relatedness while at the motocross track and when hanging out with peers were high among participants. Specifically, participants explained the value of recreational motocross and its social setting. Positive influences came from spending time with friends and peers who share similar interests while actively participating or planning to participate. Feeling related to their contextual environment and missing that relatedness while away from the sport during their injury rehabilitation motivated participants to continue their participation in recreational motocross.

Several decades of participating in recreational motocross had allowed James to meet new people who share the love of the sport. He acknowledged most of his most valued relationships have come from recreational motocross. When he felt like he did not have a successful day on the bike, he was quick to acknowledge his appreciation of the opportunity to be at the motocross track with friends who related to his passion. Joe also iterated “for the most part, all my friends are involved in the sport.” He explained those not involved in recreational motocross could not understand why he would consider riding again after his injury. They did not relate to his behavior. He continued, “Them not understanding the sport and understanding, you know, just the lifestyle that it brings is the reason why 95% of my friend group is from the moto community.” There was a mutual respect and understanding between peers in the recreational motocross context.

When Tucker sustained his concussion, a man he had never met before hurried to Tucker’s aid. He helped Tucker get off the ground, return the bike to his truck, and found Tucker’s account on Facebook to check in on him later that day. The stranger offered concern, support, and advice in his correspondence. Tucker explained his appreciation for the concern and assistance the stranger offered. He understood the interaction to come from a place of respect from someone who had likely been in his situation in the past. The mutual respect between peers, albeit strangers, enticed participants to look out for each other. When most recreational participants noted this respect and courtesy it connected them to their contextual environment, plus provided a sense of safety and comfort.

Participants struggled to verbalize the special intrinsic sensation they received when they participated in recreational motocross, or how it drew them to return to the sport after sustaining a significant injury. They struggled to describe the gravity of what they received from their

participation and what the sport meant to them. Within the context of the motocross setting, surrounded by people who shared their understanding, participants do not need to work to explain it. There was a mutual respect between peers supported by a love for a unique setting and activity. When they conversed there was a natural comprehension that is likely left undiscovered, or, at least underappreciated by those who are not connected to the sport. Whether with a friend or a stranger, when participants who shared such a unique activity and environment conversed with their peers, there was a demonstrated baseline of mutual respect and understanding of each other.

Participants also felt a deeper bond to the sport as they discussed typical motocross topics. Tucker acknowledged motocross was more than a recreational activity to him. He explained, “I enjoy all aspects of the sport. I spend my whole life around the sport, at least as a fan. Even when I wasn’t riding.” James referred to discussing aspects of the sport other than his personal participation as “bench-racing.” He enjoyed debating the professional side of the sport with peers, discussing bike setup options and other opinions of different tracks, plus reminiscing about previous experiences within the sport. During his injury rehabilitation, Cody continued to reach out to his motocross peers to continue his connection to its specific environment. Because he was unable to ride, he was not attending practice days with his friends. He asked about track conditions, how well they rode, and other questions specific to recreational motocross. He attended local races while he ambulated with crutches and a leg cast to rejoin the familiar environment that he enjoyed.

Previous research into relatedness and motivation suggested peer engagement and a sense of belonging enhanced performance while building intrinsic motivation (Baumeister & Leary, 1995; Howard et al., 2021). Howard et al. (2021) proposed environments of control may thwart

feelings of relatedness and intrinsic motivation. Participants did not feel externally controlled by their contextual environment. They desired to return to recreational motocross and its contextual environment. They enjoyed the setting of recreational motocross. There was an appreciation for being at the track, surrounded by typical happenings at motocross events, even when not actively participating. They reported autonomous behavior and exuded an affinity for the connection to the contextual environment the sport provided. But the friendship and camaraderie significantly influenced relatedness, as Cody noted, “We’re going to hang out with our friends, and the dirt bikes are the reason we’re hanging out.” Baumeister and Leary (1995) concluded, “Human beings are fundamentally and pervasively motivated by a need to belong, that is, by a strong desire to form and maintain enduring interpersonal attachments” (p. 522). Tucker felt disconnected to the contextual environment of motocross during his injury, as he explained, “There were sensations of missing out when I knew others went to the track.” Missing the special connection between themselves, peers, and the whole contextual environment of recreational motocross amplified participants’ yearning for relatedness and increased intrinsic motivation to successfully rehabilitate their significant injuries and return to recreational motocross.

Competence. Competence was identified as the feeling of mastery, one’s perception of their ability to learn or grow, and a desire to feel effective, which can be satisfied through positive feedback when afforded optimal challenges (Fortier et al., 2012; Ryan & Deci, 2020; Spinath & Steinmayr, 2012). Competence was a major facilitator of self-determination and intrinsic motivation (Deci, 1985; Ryan & Deci, 2000b) but feelings of competence toward an activity must be accompanied with autonomous behavior (Spinath & Steinmayr, 2012). Competence without a sense of autonomy is less likely to lead to intrinsically motivated behavior

(Spinath & Steinmayr, 2012). Participants rarely spoke of motivation through their rehabilitation stemming from observable progress in physical function; however, the desire to return to an activity that affords them captivating intrinsic challenges, adversity to overcome, and skills they wish to master was palpable.

Cody explained his ultimate love of recreational motocross comes from the challenge it provided. It was a challenge specific to the sport and he “cannot get it anywhere else. It’s addicting.” The opportunity to return to such an intrinsically challenging activity was his driving motivator to successfully rehabilitate his significant injury. What he appreciated the most about the challenge of recreational motocross is the combination of mental and physical abilities, as well as the inability to ever reach perfection. He stated, “You’re doing a thousand things at once. It takes so much work to get to where you’re decent,” and “it’s never good enough. It could always be better. There’s always a challenge to chase.” James noted successfully landing a big jump for the first time, or improving within the smaller, more technical, or trickier obstacles on a motocross track provided him the greatest feeling of achievement.

Part of the special intrinsic sensation these participants received from recreational motocross comes from the challenge it provided, and the idea that no other activity simulated its experience. Participants did not actively search for other activities to fill that sensation while rehabilitating. They felt a strong sense of autonomy to return to recreational motocross, accompanied with a strong belief in their ability to do so. When a behavior is perceived to be autonomous while supporting one’s desire to be competent research has shown high predictability of intrinsically motivated behavior (Fortier et al., 2012).

Participants of this study desired feelings of growth and skill progression, yet they were not as interested in measuring their progression against others. They did not emphasize their

competition results. They were able to detect miniscule progressions through obstacles on the track that often only take microseconds to complete. Cody mentioned he felt it when he perfectly executed a corner or noticed better balance through a deep rut. Often the progressions that excited him the most were not the most visible, such as clearing the biggest jump. The participants were incredibly in tune with their own abilities, along with what progress looked like and felt like on their bike. They were experts of their own capabilities, so much so that they were hypersensitive to miniscule progressions and celebrate evidence of progression. The feelings of accomplishment with noted progressions caused the participants to yearn for their reentry into the sport and motivated them to further rehabilitate their significant injuries.

Autonomy. Within the context of motivation, autonomy represented a sense of control over one's behavior (Ryan & Connel, 1989) and autonomous behaviors were aligned with personal values and enjoyment (Deci & Ryan, 1985; Ryan & Deci, 2000b). Participants did not mention incentives coming from the formal injury rehabilitation process. They did not mention conjured inspiration from working with their doctors, physical therapists, or any other professional entity meant to facilitate their progress. Participants did not mention their career relied on rehabilitating, and the idea of improving their physical function for the sake of their family was not a common theme across all participants. What motivated these participants to further endure the process of injury rehabilitation was their desire to return to recreational motocross, stemming from strong evidence of autonomously driven behavior.

What the participants appreciated the most about recreational motocross was the intrinsic sensation they receive when they participate, and it's fulfillment of intrinsic values. Participants explained the special intrinsic sensation they receive from recreational motocross to be unduplicatable, and indescribable. The word "addicting" was used to reference the sensation, yet

common phrases across participants were “it’s hard to explain to somebody that hasn’t done it before,” “it’s just a feeling that you can’t really explain, and you cannot get it anywhere else,” “it’s so powerful, I can’t even explain it,” and “it’s hard to explain unless you’ve done it. It’s hard to explain why I love it so much.” Internalizing behavior increased participation for the pure enjoyment of an activity (Waalder et al., 2022). Recreational motocross’s most notable benefits in this study were internalized, which led to participants’ autonomous desire to return to the sport.

Participants had spent years, in some cases several decades, participating in recreational motocross. They noted their schedules, health habits, social support, and life philosophies revolved around the sport. A substantial amount of thought, time, and effort had been invested in their recreational activity. However, they were unable to effectively describe the benefited intrinsic sensation which drove them to risk and endure significant injuries, then return to the same activity. Such a perception, which has transformed their life, must be an incredibly unique and significant sensation. The magnitude of such a special intrinsic sensation was the driving force behind their motivation to rehabilitate a significant injury, then further pursue recreational motocross. The gravity of such a special intrinsic sensation was the impetus of their learning through the phenomenon in question.

Several themes relating to self-determination emerged from this research. Evidence of intrinsic motivation was observed, along with the three innate values of autonomy, competence, and relatedness that fulfills intrinsically motivated behavior (Deci, 1985; Ryan & Deci, 2000a). Aligning with previous research (Hagger et al., 2014; Ryan & Deci, 2017), participants’ strong sense of autonomy showed to be the best predictor for their intrinsically motivated behavior. Certain extrinsic motives to return to recreational motocross, such as understanding the alignment between the sport and their personal life philosophies and values were evident. These

identified and integrated regulated behaviors were shown to be a strong influence on behavior, despite research considered such themes to represent extrinsic motivation (Ryan & Deci, 2020). However, each participant was highly motivated to rehabilitate their injury and return to their recreational activity to fulfill their intrinsic desires. Themes of chasing a special intrinsic sensation, along with feelings of achievement and camaraderie were common across participants. Such themes promoted participants' intrinsic motivation and supported previous SDT research by suggesting fulfillment of autonomy, competence, and relatedness highly influenced participants' injury rehabilitation and return to recreational motocross.

Characteristics of Self-Directedness

Participants demonstrated evidence of learner responsibility, awareness and self-evaluation, autonomy, and resiliency throughout their experience of rehabilitating a significant injury and returning to recreational motocross. Each of the characteristics depicted in this section are common among definitions of SDL (Candy, 1991; Garrison, 1997; Gugliemino, 1977; Kim et al., 2013; Knowles, 1975; Raemdonck et al., 2011; Tough, 1979), suggesting the participants exhibited significant levels of self-directedness throughout the phenomenon.

Learner Responsibility

Learner responsibility is framed as those who take initiative, show independence, and persistence through learning episodes (Gugliemino, 1977). These demonstrations were observed through self-determining what they learn, seek resources, and organize the learning endeavor (Brockett & Hiemstra, 1991; Candy, 1991; Gugliemino, 1977). Evidence of participants' taking responsibility for their injuries, then initiative in formulating a rehabilitation plan, were plentiful.

Participants understood the risk their participation in recreational motocross imposed before they were significantly injured. Candy (1991) suggested raising one's level of awareness

of strategies and outcomes of behavior can improve one's sense of personal control. Participants of this study believed significant injuries were "part of the game," and "inevitable." They were aware of and had accepted the risk of significant injury before they were injured. Their awareness influenced a heightened level of perceived control, making their significant injuries more palatable. Not that they wished to be injured, but they did not feel a sense of shock despite the immediate, intense trauma. The participants would not say their experience was easy to navigate, and it is not an experience they ever wish to endure again. But the lack of surprise and the quick acceptance of its happening influenced them to feel responsible for the trauma, along with whatever it would take to return to the sport that caused their injuries.

Andy's bike cut out on him as he was taking off from a jump, causing him to lose control at an inopportune time and crash. Others may find solace in blaming an external entity, suggesting they did nothing wrong, and the fault of the crash should land on the bike. However, Andy acknowledged he is the one who relied on his bike's performance; therefore, it was his responsibility if something went wrong. Joe explained he had to redirect his typical path off of an aggressive jump because he realized slower riders were just ahead. Altering his trajectory led to an unsuccessful landing and his spinal cord injury. Had the slower riders not been in front of him at that exact moment, it is unlikely he would have sustained a permanent physical debilitation. But Joe frankly stated he had never put blame on any person other than himself. He acknowledged it was his responsibility to know where other riders were on the track, and it was his responsibility to make a judgement call on what was safe versus reckless. Reflecting on their injury experience, participants demonstrated perceptions of increased personal control, aligning with Candy's (1991) notion of influencing self-directed behavior.

Researching for adequate resources to facilitate their rehabilitation and return to recreational motocross was a major contributor to participants' responsibility. Knowles (1975) highlighted questions a learner should ask themselves when initiating a new learning episode. Such questions are meant to help the learner identify what they desired to learn or achieve, what are appropriate and feasible resources to utilize, and how success will be evaluated. Aligning with Knowles' (1975) idea of developing a learning plan, participants of this study understood successful rehabilitation would require them to identify the problem, learn how to adequately facilitate the physical healing process and preparation of returning to the sport, then ultimately decide when it is appropriate to resume their sport.

These participants did not restrict themselves to bedrest, assuming the body would properly heal itself. They sought information to aide their recovery. Tucker did not seek formal healthcare from a doctor or physical therapy. He utilized his wife's background as a nurse, her resources, as well as his personal abilities to research adequate information. All other participants sought formal medical care. Previous experiences through injury rehabilitation allowed Derick a calm demeanor and belief in his healthcare. He utilized prior relationships with doctors and physical therapists to facilitate his rehabilitation. Internet searches and talking to peers within the motocross environment helped guide the participants to the healthcare they needed.

Participants showed initiative by resourcing rehabilitation facilitators. Knowles's (1975) research noted a sense of independence, despite relying on others to facilitate their progress. Knowles's (1975) definition of SDL explained self-directed learners "take the initiative, with or without the help of others, in a diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate

learning strategies, and evaluating learning outcomes” (p. 18). SDL is not independent learning. Self-directed learners show independence in their initiative, responsibility, and persistence while they utilize adequate resources to facilitate their learning experience. Participants of this study accelerated their rehabilitation through their initiative, independence, and persistence, Such initiative conjured an extraordinary sense of responsibility.

Reflection and Self-Evaluation

Adapting or modifying a learning episode when needed, and adequate self-evaluation were fundamental to successful learning endeavors (Candy, 1991; Guglielmino & Guglielmino, 2001; Knowles, 1975). Progress through the phenomenon would likely have been thwarted had participants not displayed such criteria. Participants were quick to show evidence of awareness after sustaining a significant injury. They understood altering their style of participation to the sport was needed to safely continue in recreational motocross. Their heightened awareness led to reflection on their current practices, followed by purposeful self-evaluation to adequately modify their previous perception and activity within the sport.

Participants’ fear of reinjury, along with the pain endured and lack of physical function after sustaining a significant injury drove them to carefully consider their position and approach to recreational motocross. The difficulty and unpleasantness of rehabilitating a significant injury sparked their reflection. Reflection on their experience and comparing previous practice versus desired outcomes was required before participants were able to learn and make a behavioral change (Candy, 1991). Candy (1991) explained, “If people are to develop a sense of personal control, they need to recognize a contingent relationship between the strategies they use and their learning outcomes” (p. 389).

Participants focused on relatively short-term disabilities and future consequences of their injuries. Tucker mentioned long-term effects of brain injuries concerned him the most. Cody's ankle fusion had caused permanent loss of mobility in his ankle. Joe was well aware of the long-term ramifications from significant injuries, such as his paralysis. James had returned to recreational motocross after his most recent significant injury yet found himself more fearful than ever when riding. A fear that he had not felt before through several decades of participation. He and Derick were at a point in their life where they believed it would be more costly to their health to sustain another significant injury. Andy admitted the fear of reinjury was in the back of his mind during his first few rides after rehabilitation and continued to be a consideration. Rehabilitating a significant injury was not described as an enjoyable experience, but it sparked their reflection which led to a behavior change.

Participants' reflections quickly began after sustaining their significant injury. James lied in a hospital bed when he felt he let his family down and contemplated what went wrong. James considered the other responsibilities he had in his life that are affected when he is injured immediately after his most recent injury. Tucker contemplated his goals within recreational motocross the same day he sustained his concussion, as he asked himself, "Why am I really out here? Do I need to go faster?" and "what is this for?" Tucker's concussion was the first significant injury he sustained from recreational motocross as an adult. The new experience brought unique reflection that he had yet to consider regarding his participation. Cody had sustained significant injuries in the past, but he considered his most recent injury his most significant. Being the most significant injury and enduring a surgery that left him with permanent loss of ankle mobility led to more contemplation and reflection compared to previous injuries. James and Derick had both participated in recreational motocross for several decades and had

sustained multiple significant injuries. Both described more fear of reinjury and self-reflection after recent significant injuries. Both mentioned their age and stage of life factored into their reflection compared to previous injuries. Participants sustained different significant injuries from one another, and each came to a point of reflection from different vantage points. As “analyzing their own approaches to learning” (Candy, 1991, p. 389) is an essential focus of learner control, each participant recounted similar contemplations about their participation within recreational motocross, similar desires to continue their participation, and similar strategies to safely do so.

Critical reflection was a crucial aspect of exhibiting self-directed behavior that influences new perceptions and learning (Wang & Cranton, 2012). Candy (1991) explained reflection within self-directed behavior as “continually reviewing the process of learning (as both a cognitive and a social phenomenon) and making strategic and tactical adjustments to one’s approach in order to optimize learning potential” (p. 134). In this study, participants’ reflections moved from general thoughts of “what is my goal within this sport?” to “how can I continue riding without getting hurt again?” It was rare for participants to ever consider completely exiting the sport. They knew they would continue participating, but they needed to find strategies to safely do so. They demonstrated a sense of bargaining with themselves and found similar concessions to convince themselves it was possible to continue riding motocross while mitigating risk. Some considerations relied on more intrinsic behavior modifications than others. After rupturing his spleen, James thought his new bike was too powerful. He sold the bike he crashed because he believed a less powerful bike would keep him safer. Within two weeks of his injury, he had sold his bike and purchased a new one.

James’s most recent injury was more aligned with the rest of the participants’ personal reflections. Similar strategies across participants were contemplated then implemented once they

were able to return to recreational motocross. Mitigating risk meant being more mindful of their energy, track conditions, and most importantly, aligning their behaviors to their goals within the sport. Arm pump, the feeling of the forearm muscles and hand being extremely fatigued and numb, was a common consideration. Rather than pushing through arm pump and continuing to ride, which is an expectation of being a successful racer, participants decided pulling off the track to let their muscles recover before riding again was an easy concession. Tucker explained trying to ride with arm pump is “an easy way to make a mistake or get hurt.” Participants decided their goals within the sport is not to win races or chase championships. They did not believe those extrinsic values were most important to their participation. Therefore, pushing themselves to continue riding when they struggled to hold on to the handlebars was not necessary.

Participants believed they could be more mindful of track conditions. Joe explained he struggled to maintain proper balance in deep ruts, large braking bumps, and acceleration bumps. Tracks with soft, deep, and “loamy” dirt develop the deepest ruts and biggest bumps. He learned to avoid such obstacles were in his best interest. He knew his riding style would forever be altered after such a permanent injury. He needed to find strategies to maintain safety if he were to continue his participation. Derick considered similar track conditions. He aimed to avoid tracks that had developed big ruts and bumps. He admitted on multiple occasions he prepped his bike, loaded it up with his gear, drove to the track, rode a couple of laps and determine the track was “too rough” to continue. Derick and James understood they were more comfortable on certain tracks. They both believed they would find tracks that were less intimidating with smaller jumps. Tucker reflected on his purpose and desires to continue riding, then determined he did not need to attempt the biggest jumps or the most difficult obstacles.

Participants found strategies to mitigate their risk while participating in recreational motocross. They detailed specific goals and their reasons for wanting to continue their participation. Evidence of self-directedness through a learning episode is indicated by “being willing and able to accept alternative points of view as legitimate and being able to deal with objections, obstacles, and criticisms of one’s goals without becoming incapacitated, threatened, or angry” (Candy, 1991, p. 135). Once they had reflected on their purpose for continuing, they outlined strategies that aligned with those goals. They struggled to verbalize the special intrinsic sensation they received from participation in recreational motocross. However, they acknowledged its presence, and knew it was a feeling they could not receive from any other activity. To walk away from the sport would leave a spiritual hole within them. Their self-evaluation and new perceptions led to a realization that they could sense fulfillment without going as fast as possible, without taking huge risks, and they emphasized goals of longevity within the sport. It was easier for participants to develop strategies to mitigate risk and accept new expectations once these realizations were made.

Autonomy

Participants demonstrated an ability to take responsibility for their experience and actions, along with reflective and self-evaluative skills. Such are characteristics of self-directedness (Candy, 1991; Knowles, 1975; Tough, 1979), but they are dependent on feeling autonomy and intrinsic motivation. Autonomy was intrinsic motivation’s best predictor (Hagger et al., 2014; Ryan & Deci, 2017), and intrinsic motivation was a vital component of self-directed learning (Candy, 1991; Garrison, 1997; Gugliemino, 1977; Kim et al., 2013; Knowles, 1975). Participants demonstrated high levels in all facets of self-directedness.

Participants had their own reasons for riding motocross, what benefit it brought them, and what was most important to them regarding their participation provided clarity to their position within the sport. Candy (1991) provided potential indicators of autonomous learning, including “continually reviewing the process of learning (as both a cognitive and social phenomenon), and making strategic and tactical adjustments to one’s approach in order to optimize learning potential,” “determining what is really of personal value or in one’s interests, as distinct from what may be expedient, or what may be conveniently so regarded,” and “being willing and able to accept alternative points of view as legitimate and being able to deal with objections, obstacles, and criticisms of one’s goals without becoming incapacitated, threatened, or angry” (pp. 134-135). These indicators of autonomous learning suggest the participants of this study exuded significant levels of autonomy. Their ability to reflect and self-evaluate led to altered views and approaches to their participation compared to pre-injury patterns. They determined what was most important to them, developed new perceptions of their participation, and contemplated strategies to fulfill their new perceptions. Their reflection and new perceptions were contemplated internally, and development of their personal perceptions did not rely on outside influences. Their level of responsibility, awareness, self-evaluation, and evidence of learning were a credit to their autonomy.

Bike malfunctions and other riders’ unplanned actions accounted for a number of injuries. Participants recalled and explained the events leading to their crash and injury with full understanding of primary factors to their crash were, in part, out of their control. However, participants accepted responsibility despite noted external factors. The ability to take responsibility of their injury experience and rehabilitation was a significant factor of self-directedness (Candy, 1991; Guglielmino & Guglielmino, 2001; Knowles, 1975). Along with

accepting injuries as inevitable, they also accepted injuries are commonly acquired due to conditions outside of their control. They believed they are ultimately responsible for what happens while riding. Accepting their fate led to an acceptance of rehabilitation responsibility, suggesting high levels of autonomy when they faced the injury rehabilitation process.

Research has shown that learners who feel unable to self-direct struggle to take responsibility for their learning (du Toit-Brits, 2019) and may suffer from learned helplessness. Learned helplessness refers to the idea that a learner is unable to adequately take control of their learning episode, often due to lacking a sense of responsibility and autonomy within their ability to learn (Candy, 1991). Lack of experience in self-directed behaviors and learning contribute to learner helplessness. Previous significant injuries and observation of the prevalence of significant injuries among peers within the sport of recreational motocross provided awareness and preparation for their significant injury rehabilitation.

The participants' goal was to rehabilitate an injury. They believed it was their responsibility to achieve it, and they felt capable of creating a productive plan. It was their responsibility to determine what adjustments needed to be made and what was required of them to learn when they were ready to resume their participation in recreational motocross. Accepting responsibility led to participants researching doctors, physical therapists, existing research, peers, and other informal relationships for best practice of their rehabilitation. The demonstrated level of learner responsibility throughout their injury and rehabilitation experience was based on a foundation of significant autonomy (Candy, 1991; Knowles, 1975). They believed they were in charge of accomplishing this goal and ultimately control the decision-making process with the facilitation of other professionals.

The challenge of skill progression within recreational motocross provided intrinsic motivation to successfully rehabilitate their injuries. Aspirations of accomplishments drive intrinsic motivation (Deci & Ryan, 1985; Ryan & Deci, 2000b). However, competence alone, does not enhance intrinsic motivation unless coupled with a level of autonomy (Spinath & Steinmayr, 2012). The accomplishments of note in this study were not identified through race results, championships won, or other external prods. Fulfillment was seen when participants identified evidence of personal skill development, or improved performance compared to their previous attempts at similar obstacles. The challenge to feel intrinsic success in recreational motocross was highly respected and led to a strong desire to accomplish goals aligned with personal development. The evidence of internal control, responsibility, and action toward goal completion suggests the participants had developed a significant level of autonomy (Deci & Ryan, 2000; Deci & Ryan, 2008; Hagger et al., 2014), which was used to successfully rehabilitate and return to their recreational participation in motocross.

Resilience

This study viewed resiliency as the ability to return to a healthy state after experiencing trauma or a decline in function while considering instances of adaptability (Hassett & Finan, 2016; Kim et al., 2013). Each participant spoke of injuries they had sustained from recreational motocross, some leading to permanent disability and life-altering functionality, but never wavered from the desire to ride again. Participants adapted and persisted through pain, physical dysfunction, and a learning process that extended past their initial return to recreational motocross. Such persistence throughout their injury rehabilitation suggests they possessed high levels of self-directedness (Kim et al., 2013). Research has shown

definitive positive correlations between resilience and P (persistence)... indicating a tendency to persist once an action begins. A person with a high P shows a tendency to continue striving despite fatigue and frustration. This dimension most closely resembles the definition of resilience, which is referred to as the power or ability to overcome adversity and hardship and to recover to the level observed before stress. (Kim et al., 2013, p. 1108)

Participants demonstrated high levels of personal responsibility, goal setting/completion, and adaptability. Together, these abilities enhanced participants' resiliency through trauma and enhanced their ability to be self-directed (Conrad et al., 2013; Kim et al., 2013; Naylor et al., 2017). People with low levels of self-directedness deflect responsibility and struggle to pursue goals, leading research to conclude "to have a high level of resilience, people need a high SD (self-directedness) to enable them to adapt easily to the external environment without overreacting" (Kim et al., 2013, p. 1109). Participants of this study did not blame themselves or show evidence of self-doubt through their experience despite the adversity. They persisted through the entire rehabilitation process. Levels of self-directedness aided participants' resiliency, which was facilitated by their sense of autonomy, and their autonomy fueled their intrinsic motivation. These traits laid the foundation for participants to adapt, persist, and illustrate significant resiliency and self-directedness throughout the phenomenon.

Mental Toughness and Psychological Readiness

The challenges of returning to a sport after sustaining a significant injury go beyond physical recovery. A lack of psychological readiness to return to a sport after injury rehabilitation often hinders one's performance (Maddison & Prapavessis, 2005). Arden et al. (2015) explained injury rehabilitation currently emphasizes physical function, but "physical and

psychological readiness states do not coincide” (p. 507). Participants’ mental toughness enabled their psychological readiness to return to recreational motocross once physically rehabilitated.

Self-control and a commitment to goal achievement has been associated with mental toughness (Meggs et al., 2014). Navigating obstacles and a potential for failure in pursuit of goal attainment suggests emotional stability and positive self-control exists within mentally tough individuals. One variable of self-control is pursuing goals authentic to oneself. Authentic goals are referred to “goals that reflect their true self, which in turn contributes to more successful goal pursuit” (Stavrova et al., 2019, p. 1334). Authentic goals are intrinsically formulated. They are not framed by social pressure or other external prods. “Selecting authentic goals might make it easy for high self-control people not to be distracted by goal-conflicting desires” (Stavrova et al., 2019, p. 1335). Participants showed heightened awareness of psychological obstacles throughout their rehabilitation. Such psychological obstacles were fears of reinjury, acknowledging their injuries affected their ability to provide for their families and their job performance, plus social influences suggesting they cease their participation in recreational motocross. Their reflection, self-evaluation, and behavior change allowed them to consistently strive for their goal achievement, but the displayed characteristics of self-directedness were made possible by their self-control through adversity and mental toughness.

Fear of reinjury is a common psychological factor hindering an athlete’s ability to return to their sport (Arden et al., 2015; Kvist & Silbernagel, 2021; Podlog & Eklund, 2006). Fear of reinjury was a theme among all participants. It was their fear of reinjury that spawned their altered perception of participation and behavior change within the sport. Podlog and Eklund (2006) explained athletes were nervous to engage in activities and drills that put their bodies in a similar situation to the one that caused their original injury. Athletes who significantly injured

their knee when sprinting or jumping showed trepidation to perform those same activities once rehabilitated. Returning to a game scenario was perceived as a threat because of the lack of control from the athlete. Unplanned for situations and unexpected actions from other athletes caused great concern. Participants were confident in their abilities to implement strategies to achieve their new goals within recreational motocross. They contemplated strategies to reduce collisions with other riders and they were aware of techniques to minimize risk over difficult obstacles on the track.

Participants understood a successful return to recreational motocross would require a lengthy process. The psychological readiness to ride for the first time after their physical rehabilitation was substantial, but that did not guarantee they were ready to participate at a level that left them fulfilled. Significant time, energy, and effort is invested into injury rehabilitation and thoughts of wasting those resources by not reaching one's goals is a major source of athlete anxiety (Podlog & Eklund, 2006). It is uncommon for athletes to initially return to their sport after a significant injury at their prior level of function. It takes time to rebuild confidence and skill. Some athletes take up to six months after their initial return-to-sport before resuming their preinjury level of comfort and abilities (Podlog & Eklund, 2006). Participants accepted a "learning curve" was required. It would take time to remove initial fears and hesitations. They were excited to ride once able, but they accepted that the process of their successful return still required development. They believed in their new approach to the sport. They were confident that they possessed the skills required to ride motocross and further develop toward their desired goals. Confidence enhanced their psychological readiness and is a credit to their mental toughness.

Accepting injuries to be part of their participation in recreational motocross framed the participants' approach to rehabilitation and set a precedent of mental toughness. Prior to any injury, the participants assumed pain, injury, and diminished functionality were not only possible, but probable. Every day spent participating in recreational motocross began with an understanding of potential consequences. They did not shy away from the sport, despite the known consequences. They embraced the challenges of the sport. Their mental toughness aided their resolve of stress and psychological readiness to participate in motocross. Levy et al., (2012) explained, "Mentally tough athletes were less likely to perceive an encounter threatening and more likely to perceive an encounter as a challenge" (p. 75). Negative effects from external sources are minimized with mental toughness by allowing one to remain focused on controlling their behavior (Marshall et al., 2017). Participants were not manipulated by negative social forces or threats within the sport. They remained steadfast in their desire to participate despite their encounter with pain and significant injuries. Participants showed significant resolve and mental toughness to further pursue their goals of successfully returning to recreational motocross.

Implications for Practice

This study utilized recreational motocross athletes to examine motivation and characteristics of self-directedness shown throughout the phenomenon of significant injury rehabilitation. Developing a deeper comprehension of successful injury rehabilitation, and what learning is required to do so, was the motivating factor for creating this study. Application of themes from this research should be considered within fields involved in injury rehabilitation, and building successful learners.

The results and interpretations of this research highlighted the importance of motivation and characteristics of self-directed learners in relation to learning. There was a blending between motivation and characteristics of self-directed learners, as intrinsic motivation was highly regarded between the two theories and autonomous behavior helped fulfill intrinsically motivated behaviors. This research suggests those who show evidence of self-determination are more likely to also demonstrate significant characteristics of self-directedness. Therefore, internalizing motivation should be considered to enhance learning endeavors. Implementing strategies to build learner responsibility, awareness, self-evaluation, and resiliency are necessary to improve learning outcomes in adult education, and to enhance injury rehabilitation outcomes. Notably, participants displayed significant levels of autonomy and intrinsic motivation to return to their recreational activity. Their desire to fulfill the special intrinsic sensation they receive from recreational motocross showed to be the most fundamental influence to successfully rehabilitate their significant injury and return to the sport. Internalizing one's motivation within a learning episode, including injury rehabilitation, is likely to realize its greatest potential and yield the highest outcomes.

There are multiple strategies to internalize motivation and build self-directedness that may enhance injury rehabilitation outcomes. Along with outlining long-term goals for the injured patient, health care professionals can make a considerable effort to better understand the patient's intrinsic values. Acknowledging drivers of intrinsic motivation and autonomy may help identify potential associations to the injury rehabilitation process and its internalization. Questionnaires to identify current motives, levels of autonomy, and self-directedness may be distributed at the patients initial health care appointment, and again at designated times when updating the patients progress reports.

Participants were intrinsically motivated by what they knew and understood. In this case, the desire to return to recreational motocross. They were motivated to succeed in their rehabilitation because they understood it to be a necessary component before they were cleared to participate in recreational motocross. They showed significant characteristics of self-directedness to resource their rehabilitation. But their motivation was concentrated on the “light at the end of the tunnel.” They did not report motivation or solace in the minor achievements and progressions through their rehabilitation. Participants explained their rehabilitation took several months, in Joe’s case, multiple years, before they felt they had successfully returned to recreational motocross. Those are long bouts of pain, physical dysfunction, and disability to endure, if one is solely motivated by the final product and unable to effectively appreciate more short-term successes.

Successfully returning to recreational motocross after sustaining a significant injury led participants of this study to display significant levels of personal responsibility, adaptability, and resilience. These characteristics may, in part, be credited to the participants perception of injury and pain associated with their recreational sport. Before they sustained a significant injury, participants understood and accepted the physical risk of their activity. They took responsibility and did not place blame on external entities or catastrophize their injury. Referencing the personality of those more prone to chronic pain, Corad et al. (2013) noted, “Psychotherapy aims at changes of cognitive concepts and psychological mechanisms underlying character dimensions such as self-directedness. For example, cognitive-behavioral psychotherapy of chronic pain aims at diminishing misinterpretation of nociception [pain perception], enhancing self-efficacy and lessening avoidance” (p. 7). This suggests low self-directedness can directly impact pain perception, personal responsibility, and self-belief in potential healing. Identifying an injured

patient's current level of self-directedness through questionnaires may help identify what characteristics of self-directedness can be improved, leading to enhanced injury rehabilitation outcomes.

Once intrinsic motives, drivers of autonomy, and level of self-directedness are identified in a physically injured patient, strategies to develop internalization and self-directedness can be applied. Physical therapy of an injury requires patients to attend their treatment sessions, and typically provides patients with a home-exercise plan (HEP) to perform outside of their physical therapy appointments. Patients that lack internalization and responsibility may be less compliant with their physical therapy regiment. Kattan et al. (2023) revealed significant non-compliance to physical therapy in medical patients that underwent orthopedic surgeries, similar to the injuries sustained by participants of this study. Enabling patients to be more active in the decision-making process may elevate compliance. This may include patients being more involved in the goal-setting process. Allowing the patient options of exercises or interventions to perform may enable a sense of responsibility and active participation. Understanding intrinsic values and drivers of autonomy may help the healthcare provider correlate the rehabilitation interventions to the patient's internal motives. Such strategies are meant to enhance responsibility and compliance to interventions.

Participants did not report receiving inspiration or motivation through their injury rehabilitation from formal medical care. All but one participant sought medical care from doctors, surgeons, or physical therapists to facilitate their rehabilitation. Extensive time was spent in medical offices and conversing with medical professionals. Participants described multiple office visits to multiple doctors. They received shots and surgeries, and they attended physical therapy. Yet, no participant mentioned they comprehended the physical process of

healing or benefit of specific interventions received. Therefore, they were less likely to internalize medical information or feel intrinsically motivated by their formal medical care. Motivation to return to motocross and internalizing the physical interventions meant to facilitate their rehabilitation seem to represent two separate points which only interacted on the most superficial level.

Medical professionals in the field of physical rehabilitation are licensed to treat patients after years of education, training, and testing. An extensive amount of education is required to adequately treat such occurrences. They are equipped with vast amounts of knowledge and experience to facilitate the physical healing process of significant physical injuries. It may be unrealistic to expect medical patients who are not trained in the field to display a working knowledge of physical rehabilitation. But all physical tissue is attached to a brain. Those attempting to rehabilitate from a significant injury have the potential to learn and internalize their rehabilitation endeavors. All members of a significantly injured patients' medical care team likely have more medical education and comprehension of the significant injury than the patient. No matter the medical discipline (e.g., doctor, surgeon, athletic trainer, physical therapist), each likely has the aptitude to facilitate comprehension of any medications, functional contraindications, injury protocols, or exercises entailed to promote the healing process. Injured patients rely on the education of their medical team. Participants sought information from medical professionals and those with specific information, which participants did not personally know. They desired facilitation to their rehabilitation and displayed a willingness to learn. Medical professionals should attempt to fulfill that desire, and work to implement strategies concurrent with adult learning in the physically injured population. Facilitating their learning

throughout the rehabilitation process may be worth consideration when analyzing patient outcomes and results of physical rehabilitation.

This study underlines the concept of significant injuries not only being physically taxing, but mental, emotional, and spiritual values are affected. Hyper-focusing on physical ailments and rehabilitation without considering the spirit behind the person suffering the debilitation may be a disservice and stunt the progress of rehabilitation. It is worth considering any injured tissue in the body is attached to a brain. A physical injury may be progressing but if the injured patient is unable to perceive the progress or unable to comprehend its significance, that patient may not return to their prior level of function. How does that misperception affect a patient's life outside of their physical rehabilitation? Questionnaires to identify intrinsic values and self-directedness may help identify what strategies can benefit a medical patients internalization and self-directedness before interventions are initiated. Following up in such disciplines can be marked when generating routine progress reports. Increasing medical patients input during decision-making processes may influence compliance to their rehabilitation protocol by fulfilling their autonomy, personal control, and responsibility. Informing the patient of intended goals of each intervention and educating them to a realistic understanding of healing concepts may enhance their ability to internalize their rehabilitation. Building strong learners may be the key to unlock a significant boost in physical rehabilitation outcomes.

Participants received an intense, special intrinsic sensation to return to their recreational activity. Their desire to ride motocross did not wither after sustaining a significant injury. Perhaps not all physically injured patients are motivated to rehabilitate their injuries to return to a special activity. Some injured patients may lose a desire to return to a physical activity after a significant injury. Not every injured patient has a clear "light at the end of the tunnel." They may

not internalize their rehabilitation to such a degree as the participants of this study, hindering their motivation and self-directedness. Such a hindrance may negatively affect injury rehabilitation outcomes. Themes of intrinsic motivation and characteristics of self-directedness should be considered to further progress rehabilitation outcomes in those who have sustained a significant injury.

Future Research

Although this research investigated significant injuries and the return to an extreme sport after rehabilitation, there are other populations who could benefit from this type of research. There are several recommendations for future research.

Future research arising from this study could perform a mixed methods study to analyze physical therapy outcomes while also administering strategies to influence intrinsic motivation and characteristics of self-directedness. Questionnaires can quantitatively measure the injured patients' subjective reports of motivation and self-directedness while physical performance and physical goal attainment throughout the rehabilitation process is qualitatively monitored by medical professionals (doctors, surgeons, physical therapists, and athletic trainers) and subjective reports from the patients. Similar research designs can analyze physical therapy outcomes when coupled with structured education pertaining to the physical treatment being prescribed. Goals of the patient education in such studies may include patients understanding of short-term versus long-term expectations of pain and function, timelines of typical progress, and education of variables they may identify that have the potential to hinder results.

A qualitative study comparing patients' autonomy and compliance to their rehabilitation protocol while receiving specific learner-control strategies may influence rehabilitation outcomes. Such learner-control strategies may include actively participating in goal setting

decisions, HEP parameters, and deciding what exercises to perform. Tracking medical providers reviews and participants' self-reported levels of autonomy, responsibility, resourcefulness, resiliency, intrinsic motivation, and self-evaluation skills may unveil modifications to the current plan of care to improve outcomes.

This study consisted of male participants only. While for this study female recreational motocross racers did not volunteer to participate, future research could try to find other ways to reach this population. Future research could analyze the essence of female recreational motocross athlete's injury rehabilitation or perhaps find another recreational extreme sport where more females participate. Encompassing a wider participant demographic can better entail the essence of the phenomenon for all who may experience it.

Conclusion

This phenomenological study highlighted the value of a learner's intrinsic motivation via autonomous behavior and characteristics of self-directedness throughout a learning episode. Learner responsibility, reflection, self-evaluation, autonomy, resilience, and fulfilling intrinsic motivation should be considered an asset throughout any learning endeavor, including significant injury rehabilitation. The characteristics listed are meant to promote internalization, and internalizing information has shown to be an effective predictor of learning and behavior change.

Participants were motivated by their desire to return to recreational motocross. Medical interventions and education from medical professionals did not seem to help participants internalize their rehabilitation efforts. Their successful rehabilitation was fueled by their "light at the end of the tunnel" and mental toughness. Medical professionals may be able to improve their patient's outcomes by effectively incorporating more patient education. Improving physically injured patients comprehension of their rehabilitation protocol may enhance their ability to

internalize the process. Medical professionals have a vast amount of knowledge and training to properly treat their patients. However, effective patient education is not likely to require the patients, and medical professionals show similar depth of background knowledge.

Comprehending the medical reasoning and clinical goals behind interventions and medications may facilitate internalization. Rather than strictly treating the individual as an injured patient, this study suggests observing them as an adult learner has the potential to enhance physical rehabilitation outcomes.

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Appendix A - Interview Protocol

Initial Interview Protocol

Tell me your story and your experience with a significant injury in recreational motocross. What happened and how did you go about recovering?

Probe motivation – Tell me more about your motivation to return to the sport after your injury. Where did you gain the motivation? What social support did you have? What do you think motivated you at different points throughout your rehabilitation? Was there a specific feeling or desire that motivated you to return?

Probe self-directedness – Tell me more about how you learned to do things during your recovery. What did you have to do to learn how to ride again? How did the injury alter your function on the bike? How did you relearn these functions? What instruction or assistance did you seek out?

What was it like when you first returned to the sport? Would you explain your mindset, emotion, and feelings as you were preparing to ride for the first time after the injury, and your mindset, emotions, and feelings after your first ride?

How do you approach your participation in motocross today, compared to prior to the injury?

Why do you choose to continue your participation in motocross as a recreational activity despite experiencing the trauma of a significant injury?

What do you believe others can learn from telling your story of sustaining a significant injury, then returning to an extreme sport?

Appendix B - Participant Solicitation Message

Dear X,

I am a doctoral student working on my dissertation research. My research is focused on recreational motocross athletes who sustain a significant injury and return to the sport. What motivated you to return? What did you have to learn more about along the journey of returning? I invite you to participate in this study and tell me your journey.

We will schedule a couple of interviews which will be approximately 60-120 minutes in length to explore your experiences and perspectives.

Participation in the research study is completely voluntary and your responses and information are confidential. I will not reveal your identity and will only use pseudonyms for participants. More details of the study can be found in the attached Informed Consent document.

If you agree to participate in the study or wish for more information before agreeing, please reply to me at young614@ksu.edu and I will answer any questions and potentially set up a time for the initial interview. A hard copy of the consent form will be provided prior to the interview. If you would like to speak to my major professor (Dr. Royce Ann Collins) about this research, feel free to contact her at racollin@ksu.edu. To participate in the research, you can sign the attached Informed Consent form and return it to me.

Daryn Young

Appendix C - Social Media Solicitation Message

Attention local motocross riders and racers! I am conducting a research study to complete my Ph.D. at Kansas State University. I aim to study motivation and characteristics of self-directedness shown by recreational motocross athlete's as they recover from a significant injury and continue their participation in motocross. If you sustained a significant injury as an adult from your participation in motocross and continued to ride once you rehabilitated, you may be eligible to participate in this study.

If you are interested in participating, or would like more information on the study, please reach out to me at young614@ksu.edu, or you can either call or text me at (620) 921-5743.

Appendix D - Informed Consent Form

Project Title:

Phenomenological Research of the Motivation and Self-directedness of Recreational Motocross Athletes Returning to the Sport After Significant Injury

Principal Investigator:

Royce Ann Collins, Ph.D., Professor

Co-investigator:

Daryn Young, doctoral student

Contact Details for Problems/Questions:

Royce Ann Collins, Ph.D., racollin@ksu.edu, 785-532-5535

IRB Chair Contact Information:

Lisa Rubin, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224, rubin@ksu.edu; Brad Woods, Associate Vice President for Research Compliance, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224, comply@ksu.edu

Purpose of the Research:

The purpose of this phenomenological study is to explore the motivation and self-directedness of recreational motocross athletes who continue their participation in the sport after sustaining a significant injury in recreational motocross.

Procedures or Methods to Be Used:

You will be asked to participate in two interviews and complete a timeline of your injury and recovery from a participation in recreational motocross. For the timeline, you will sketch out your mental and physical state throughout their rehabilitation of a significant injury across the weeks and months. You will be asked to reflect upon your motivation and self-directedness while rehabilitating from a significant injury sustained through their participation in an extreme sport. The interviews will be completed via Zoom to allow for you to choose a private location and will be recorded. The first interview may last between 60 and 120 minutes and the second interview may last about 60 minutes. The audio recording will be transcribed, and the video portion will be deleted after the researcher notes any emotional reactions aligned with interview questions.

Risks or Discomforts Anticipated:

You will be asked to describe your experience of being significantly injured while participating in an extreme recreational sport, as well as your rehabilitation and return to the sport of motocross. Recounting these events may bring up memories of physical pain endured, and any psychological effects. You may withdraw from the research at any time. A reason for withdrawal is not required. In the event of withdrawal all recorded data will be removed from the study.

Benefits Anticipated:

A deeper understanding of this phenomenon and your motivation and characteristics of self-directedness may lend itself to improved rehabilitation outcomes for future extreme athletes who sustain a significant injury. The self-determination motivation theory and self-directed learning theory will guide the research, and these theories have yet to be applied to this phenomenon or population. This will provide insight and potentially apply it to recovering recreational athletes.

Extent of Confidentiality:

Participants will be allowed to choose their own pseudonym, which will be used on all transcripts and researcher notes as well as the final dissertation. You will be allowed to review the transcript of the interview to check for inaccuracies or any sensitive data that would potentially identify you and these will be omitted. All the data collected will be stored on a password protected laptop only accessible to the researcher for three years, then will be destroyed. Any hard copies of transcripts printed for analysis will be stored in the researcher's locked file cabinet and then will be shredded. Your involvement in this research is completely voluntary, and you are free to withdraw from the study at any time.

The information collected as part of the research, even if identifiers are removed, will not be used or distributed for future research studies.

IS COMPENSATION OR MEDICAL TREATMENT AVAILABLE IF INJURY OCCURS? ☐ Yes ☒ No

Terms of participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name:

Participant Signature:

Date:

Appendix E - Timeline Blueprint

Please prepare a timeline of your injury and recovery prior to the first interview. You will bring this timeline and we will discuss it. Include these items: description of the physical injury, mental state, learning you did along with way, and where motocross fits in your life.

My Timeline

Ankle injury

Physical state

February 2019: time of injury

1 month in a w/c

2 months in CAM boots

April 2019: began walking without boots

August 2019: injections

January 2020: L ankle surgery

March 2020: Return to riding/racing

November 2020: R ankle surgery

February/March 2021: Return to riding/racing

Mental state

Never wavered from riding again

Bouts of depressive-like symptoms that initiated a few weeks after injury, somewhat elevated with time.

Lack of function and inability to stand led to these initial feelings

Always felt better at different signs of progress (no more w/c, no more boots, injections)

Progress felt slow, and bouts of depressive-like symptoms hit between stages of progression

Roommate, gf, and my work helped me feel better and stay positive (sense of normalcy)

Non-moto friends said I shouldn't ride and that it isn't worth it

Moto content and pro racing helped me still feel in-touch with the sport

I knew I missed the feelings I got when I ride (fear, challenge, fun, accomplishment, exercise)

A lot of internal dialog, self-evaluation and motivation to return

More conscious of foot position when riding

More conscious to stay within certain parameters and new perceptions

After return to moto

Raced more than ever as an adult

Feeling free of injury, free of anxiety, free of impatience, sense of control

This experience reminds me I can face adversity and achieve goals

I think "I'm going to do what I want, no matter what others say"

I wanted to prove others wrong

I didn't want fear to control my actions

If I quit riding, it'll be on my own terms

Shoulder injury

Physical state

June 2021: time of injury

4 weeks in a sling

Couldn't lay down for 5-6 weeks

Dizzy/vertigo

August 2021: relatively normal function of basic ADL's

December 2021: D/C from PT

February/March 2022: began riding

May/June 2022: final sensory (pain) symptoms of injury subsided

Mental state:

Immediately contemplated my future with motocross in the hospital bed

Contemplated other hobbies if I were to quit riding

Felt more responsibility to my gf

3 years together, 5 months living together, likely get married and have a family

Much more daily pain and limited function compared to ankle injury

Ankles more debilitating long-term, shoulder more debilitating short-term

Bargained that I could ride with more caution and not take as much risk

I could sacrifice racing and just ride on practice days

Non-moto friends said "I told you so" and said I should quit

Moto friends expected me to return

I had much closer relationships with moto friends compared to the ankle injury. That social group helped me normalize the idea of continuing to ride. I didn't feel as alone or scared when returning to the sport.

I felt more certain of new perceptions and goals within the sport

What did I learn

First injury gave me a new experience of pain, altered function, unique level of adaptability, and understanding of innate desires and motivation.

Better understand emotions felt during a long-term bout of PT

Developed a stronger sense of self when explaining to people why I never doubted a return to the sport

After the ankle injury I thought I was the only person I could harm by riding; this felt untrue after the shoulder injury

More self-evaluation was required after the second injury

Felt more responsible to people other than myself (wife, family, coworkers, students, children)

Felt more responsible toward my doctoral degree

Philosophy

Understanding personal perspectives will improve my interpretation of not only personal concepts and characteristics but also open my mind to purpose and interpretation of experiences

I believe in challenging myself. To grow is to accept challenges.

Happiness and enjoying the time I have is important to optimize my experience

I want to have fun: enjoyment of activities and goals being pursued

Where motocross fits

Motocross gives me a sense of challenge like nothing else I've found in this world

I have a fun sense of fear each time I ride

I feel excited and nervous every time

Motocross provides a constant flow of overcoming fear and achievement of challenges

Thrill-seeking type behavior provides me the opportunity to fulfill several values I hold

Motocross provides me a sense of community

Motocross has provided me the ability to look inward and better know myself

Today

I am more cautious than before when riding

I still push myself to get better and develop my skills because that is the most fun I have in the sport, but I am more aware of my limits and try to make more cautious decisions

I stay within my comfort zone more often

My wife understands how excited and happy I am when I get to ride, which is not near as often as I wish

I have a baby boy, and I have mixed feelings about him riding

I was given several opportunities to try any activity I wanted as a child; I want to give him the same opportunities

I will likely buy him bicycles, balance bikes, etc. which may interest him in motocross,

but I will also allow him to try anything else he'd like

Maybe it'll be an activity that we bond over, or maybe he will choose to not participate at all

I want to provide positive experiences and influence a positive relationship between us and the rest of his family

I plan to continue riding. I have friends in their 60's that continue to ride and race recreationally

They seem to use it as a social experience, while diving into a passion, and participating in an activity that keeps them physically active

Through this process I've learned more about myself and how to overcome adversity, how to be more self-sufficient, gained insight to personal perspectives, modifying expectations and performance of activities to continue what I enjoy while being safer and fulfilling other duties outside of the sport.