

STRESS, COPING, AND DEPRESSION IN COLLEGIATE SWIMMERS

DWIGHT A. HOLMEN

B.A., University of Ottawa, 2012

A Project
Submitted to the School of Graduate Studies
of the University of Lethbridge
in Partial Fulfillment of the
Requirements for the Degree

**MASTER OF EDUCATION
COUNSELLING PSYCHOLOGY**

**FACULTY OF EDUCATION
LETHBRIDGE, ALBERTA**

February 2015

Dedication

This project is dedicated to all competitive swimmers who have experienced the unique challenges posed by collegiate athletic environments.

Abstract

Swimming is an individual sport in which training accumulates a significant amount of time when compared to competing. Collegiate swimmers are faced with unique pressures sport and academics, which both require superior performance. This study explores the effects of stress and coping on depression in collegiate swimmers. The aim of the study was to include 100 collegiate swimmers for the quantitative measures and between 10-30 of those 100 for the qualitative measures. Responses given in the mixed-method study would be analyzed and used to find common themes. If this study would have been conducted, I expect results would have shown that stress and coping play a significant role in the prevalence of depressive symptoms amongst collegiate athletes. I would have also expected stress and coping combined would have resulted in higher levels of perceived depression. It is important to understand the relationship between stress, coping, and depression because the impact in each athlete is unique and interventions need to be tailored to meet these specific needs.

Keywords: coping, depressive symptoms, stress, swimming

Acknowledgements

Thank you, to Luc Martin, my supervisor, for always challenging me to do my best. You were with me through every step of the process and never allowed me to be anything but my best. I have gained so much from our discussions about paying attention to details. This project would not have been possible without your help. Thank-you to Thelma Gunn, my second reader, your guidance throughout my time as a Masters student has been very influential and has given me the drive I need to succeed.

None of this would have been possible without my family. You have always been the best cheerleaders and helped keep me motivated to do my best. Thanks Heather and John for taking the time to listen and read my project.

Thanks to my cohort friends Hailey and Kaylee for being there at the beginning to help me frame my topic and turn it into something I can be proud of. Thanks to Nic and Ryan who spent countless hours listening to me discuss my topic on the pool deck before practice.

Table of Contents

Dedication.....	iii
Abstract.....	iv
Acknowledgments.....	v
Table Of Contents.....	vi
Chapter 1: Introduction.....	1
Chapter 2: Literature Review.....	6
Stress.....	6
Stress and Collegiate Athletics.....	8
Stress Appraisal and Coping.....	12
Depression and its Relation to Stress and Coping.....	19
Chapter 3: Methods.....	25
Participants.....	25
Measures.....	26
Demographic Form.....	26
Stress.....	26
Coping.....	27
Depression.....	29
Mood Journal.....	30
Procedure.....	31
Data Analysis.....	32
Stress.....	33

Coping.....	34
Depression.....	34
Research Questions.....	34
Chapter 4: Discussion.....	38
Stress.....	38
Coping.....	41
Depression.....	42
Stress and Depression.....	43
Stress, Coping, and Depression.....	45
Mood Journal.....	46
Chapter 5: Conclusion.....	50
Limitations.....	50
Future Research.....	51
Research Approach.....	51
Counselling Approach.....	54
Summary.....	55
References.....	57
Appendices.....	68
A. Demographic Form.....	68
B. College Student Athlete Stress Inventory.....	70
C. Coping Function Questionnaire.....	72
D. Mood Journal.....	78
E. Coach Invite Letter.....	80

F. Athlete Invite Letter.....81

Chapter 1: Introduction

Stress is commonly defined as a negative reaction to a situation in which a goal is pursued (Nicholls & Polman, 2007). When an individual becomes aware of the negative interaction, he/she goes through a two-step appraisal process (Nicholls, Jones, Borkoles, & Polman, 2009). The first step in the appraisal process is primary, which involves an evaluation of the stressor occurring after the negative interaction. The primary appraisal process is divided into four categories; harm/loss, challenge, threat, and benefit (Nicholls et al., 2009). The second step in the appraisal process is secondary, which involves a three-pronged approach. During this approach, the individual makes an assessment of the current stressor, determines his or her ability to handle the situation, and attempts to gather as many resources as possible to cope (Nicholls et al., 2009).

The presence of a stressful situation can lead to unpleasant emotions (Humphrey, Yow, & Bowden, 2000). Given the highly competitive nature of athletics, participation in sports often requires athletes to adapt to a rapidly changing environment, making it difficult to maintain emotional regulation in certain situations (Humphrey et al., 2000). Difficulties in emotional regulation from sport make athletes susceptible to chronic stress (Humphrey et al., 2000). Stressors amongst athletes can be widespread and can cover areas ranging from athletics to relationships (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010). Although sources of stress can vary, research has suggested that collegiate athletes most commonly struggle to balance dual commitments to academics and athletics (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010). Due to the high demand from academics and athletics, collegiate athletes tend to experience stress (Proctor & Boan-Lenzo, 2010). Humphrey and colleagues (2000) found that the majority of athletes report conflicts between sport and academic schedules as a source of stress. These athletes also

found the demand for sport was so high, that academics tended to experience negative consequences (Humphrey et al., 2000). The lack of balance between these major commitments is a common source of stress among collegiate athletes (Proctor & Boan-Lenzo, 2010). Despite the commonalities of stressors amongst athletes, one variable that can influence stress levels is sport type (team vs. individual).

Participation in sport can be divided amongst individual (e.g., independent) and team (e.g., interdependent) sports, and individual sport athletes are believed to be in a unique situation with regard to sources of stress (Nicholls et al., 2009). Specifically, these athletes spend the majority of their time training as opposed to competing, and interestingly, athletes tend to report more stressors when training as opposed to competing (Nicholls et al., 2009). In certain individual sport settings (e.g., swimming), athletes often interact with and rely on teammates for support (Evans, Eys, & Bruner, 2012). Despite the often-perceived dichotomous categorization of team and individual sport, recent research has distinguished between varying levels of interdependence within individual sport (Evans et al., 2012). These categories are integrated, segregated, and no task interdependence. Despite competing independently, some athletes also compete for a total team score, which is termed collective interdependence. Collegiate swimmers fall under this category and are believed to experience sources of stress from a wide variety of sources (Nicholls et al., 2009; Tamminen & Holt, 2010). Because experiencing stress can negatively influence performance, coping becomes an invaluable resource for athletes hoping to enable optimal mental and physical performance.

Considering these varying sources and impact of stress, athletes develop and use a wide variety of coping skills. Coping can be defined as “constantly changing cognitive

and behavioural efforts to manage specific or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p.141). Not surprisingly, researchers have attempted to identify how athletes cope under various sport related conditions (Crocker, 1992; Kowalski & Crocker, 2001; Nicholls & Polman, 2007; Tamminen & Holt, 2010), and this work has largely been informed by two major theories: trait and transactional approaches. Trait theory posits that individuals cope in a consistent manner across every situation without regard for environmental factors (Nicholls & Polman, 2007). This perspective revolves around the five-factor model of personality, which suggests personality is comprised of five traits (e.g., extroverted, neurotic, agreeable, open, and conscientious) (Allen, Greenless, & Jones, 2011). An individual will fall under one or more of these categories and will be influenced by them when trying to cope (Allen et al., 2011). Under this theory, an individual will cope the exact same way because genetic factors have helped pre-determine the coping style to match the individual. Alternatively, the transactional model takes an interactional approach and posits that both personal and situational factors influence an individual’s coping preferences and abilities (Lazarus, 1999; Nicholls & Polman, 2007). Under this theory, athletes are constantly influenced by both external demands (e.g., environmental) and internal drives (e.g., cognition) (Nicholls & Polman, 2007). Interestingly, the transactional approach supports the notion that coping is a learned response. This theory suggests that coping is a malleable process and can change depending on athlete needs.

Given the two major perspectives focusing on how athletes cope, it can be broken down into three specific domains; emotion-focused, problem-focused, and avoidance-focused (Kowalski & Crocker, 2001; Nicholls et al., 2009; Nicholls & Polman, 2007;

Tamminen & Holt, 2010). “Problem-focused coping describes strategies directed at managing the self or environment (e.g., problem solving, planning, or increasing efforts)” (Nicholls, Polman, Levy, Taylor, & Cobley, 2007, p. 1522). Alternatively, emotion-focused coping involves dealing with distress that arises out of the situation (Nicholls et al., 2007). This type of coping involves activities such as counselling and relaxation (Nicholls & Polman, 2007). Avoidance-focused coping is considered a maladaptive style and presents problems to athletes when they fail to cope with a stressful situation (Nicholls & Polman, 2007).

When individuals are presented with a highly stressful event, their coping responses can differ between adaptive or maladaptive coping styles (Sloan-Power, Boxer, McGuirl & Church, 2012). Given the domains of coping, when athletes begin lack a clear ability to cope, they tend to resort to avoidance-focused styles that can negatively impact mental health (Lazarus, 1999). Early coping research has focused on coping as a tool used in the treatment of mental health disorders (Lazarus, 1999; Vitaliano, Russo, Carr, Maiuro & Becker, 1985). When maladaptive coping styles (e.g., avoidance-focused coping) manifest and become chronic, they can lead to an increase in susceptibility of mental health issues such as depression.

Depression is defined within the *Diagnostic and Statistics Manual- Fifth Edition* (DSM-V) (American Psychiatric Association, [APA], 2013). Depression often includes symptoms such as the presence of low mood accompanied by somatic and cognitive changes that significantly disrupt an individual’s ability to function (APA, 2013). Depression can impact individuals at various stages of life (e.g., childhood) and can persist for varying periods depending on severity (APA, 2013). Depression is a common

disorder that impacts individuals in post-secondary educational institutions, as it has been found to negatively predict academic performance (Deroma, Leach, & Leverett, 2009; Pritchard, Wilson, & Yamnitz, 2007). Furthermore, college students are believed to be at a significant risk for depression (Deroma et al., 2009) and unfortunately, collegiate athletes are believed to be even more susceptible due to the multiple role commitments they participate in.

Although depression is one of many psychological disorders, it is one of the most common to occur and can influence a person's affect, behavior, and cognitions that can lead to clinically distressed impairment of daily life activities (APA, 2013). Stress and coping have been correlated with symptoms of depression among elite athletes (Wingenfeld et al., 2009). When athletes are exposed to a potentially stressful situation, one of two scenarios will occur. Athletes will either effectively cope with the result being alleviated stress, or they will ineffectively cope and will subsequently experience prolonged bouts of stress (Humphrey et al., 2000). Unfortunately, when this stress experience is prolonged it becomes chronic and will negatively impact the mental health of an athlete (Humphrey et al., 2000).

Despite the presence of stress and the impact it plays in sport, there have been two major theories to emerge from the literature concerning mental health and athletics. The distress-buffering theory states that athletic involvement has mental health benefits and decreases the risk of depression (Proctor & Boan-Lenzo, 2010). However, one of the major limitations to this view is that certain health benefits gained by the general population (i.e., social relationships) are not as influential to athletes (Proctor & Boan-Lenzo, 2010). The other theory is the stress-contributing theory, which states that elite

athletic status is accompanied by numerous stressors that undermine the potential mental health benefits of exercise (Nicholls et al., 2007; Potuto & O' Hanlon, 2007; Proctor & Boan-Lenzo, 2010). The distress-contributing theory increases an athlete's risk at developing depressive symptoms due to an inability to consistently cope with the stressors from multiple commitments such as academics and sport (Ayers, Pazmino-Cevallos, & Dobose, 2012; Potuto & O'Hanlon, 2007; Proctor & Boan-Lenzo, 2010). Furthermore, Leith (1998) determined that exercise performed at a high intensity diminished the mood enhancing effects declared by the stress-contributing nature of sport. Leith (1998) found that these diminished mood effects increased the susceptibility of depression. Furthermore, Weigand, Cohen, and Merenstein (2013) found 16.77% of current collegiate athletes show varying levels of depression, which was supported by Nixdorf, Frank, Hautzinger, and Beckmann (2013) who found the number to be between 15-20% of athletes.

Considering the presence and influence of stress and an athlete's inability to cope with regard to the onset of depression, this research study has two main objectives: (1) Does stress influence changes in depressive symptoms in collegiate swimmers? (2) What effect do coping mechanisms have on the presence of depressive symptoms in collegiate swimmers? For the purposes of this proposed study, all expected results would be hypothetical in nature because no data will be collected. This project's discussion will have assumptions and hypothetical results based on previous research findings.

Chapter 2: Literature Review

Stress

Stress is considered a negative reaction to a situation due to a lack of effective coping mechanisms (Nicholls et al., 2009). In order to feel stress, an individual must

undergo a perceived negative reaction to a certain situation. Following the awareness of the negative reaction, an individual goes through a two-step appraisal process (Nicholls et al., 2009). During the appraisal process, there must be a particular goal sought by the individual (Nicholls & Polman, 2007). When the attempted goal is threatened or needs to be adapted, a stress response occurs (Nicholls et al., 2009; Nicholls & Polman, 2007). In terms of the appraisal process, the first step is primary appraisal, which is an evaluation of the experienced stressor. There are four alternative appraisals that occur at this stage. The first is *harm/loss*, which consists of damage that occurs prior to the stressor (Nicholls & Polman, 2007) and the second is *challenge*, which involves the individual feeling enjoyment throughout the stressor (Nicholls & Polman, 2007). The third, which is *threat*, consists of potential damage to the future well-being of the individual (Nicholls & Polman, 2007). Finally, the fourth is *benefit*, which involves an individual benefitting from the stressor by reacting to it in a positive way (Lazarus, 1999; Nicholls & Polman, 2007). With regard to the secondary appraisal, an individual makes an assessment, determines their capability to handle the situation, and tries to gather resources to select a coping response (Nicholls & Polman, 2007; Sloan-Power et al., 2012). It is important to note that the secondary appraisal does not occur when the individual begins to cope, but rather, during the behavioral decision process (Lazarus, 1999; Nicholls & Polman, 2007).

The stress response entails three components: behavioural, physiological, and cognitive (Lazarus, 1974). However, other research has identified an emotional component to the stress response (Hiebert, 1983; Humphrey et al., 2000). For the purpose of the proposed study, focus will be narrowed to the emotional component of the stress response because this component tends to amplify the threat or demand and minimize the

impact of possible coping attempts (Hiebert, 1983; Lazarus, 1974). The presence of these stressful situations is often accompanied by certain emotional responses that can be categorized as either desirable or undesirable (Humphrey et al., 2000). To date, the majority of the literature has been devoted to undesirable emotions (Humphrey et al., 2000). Psychological disorders such as depression are believed to result from unsuccessful reactions to undesirable emotional responses, and depend on the individuals' ability to cope (Humphrey et al., 2000).

Stress and Collegiate Athletics

One population at risk of experiencing excessive stress is athletes. Athletes are constantly required to make physical and psychological adjustments in response to unpredictable and novel situations within their environments, and the resultant stress is often considered to be a disrupting factor with regard to their adaptability to these emotions (Humphrey et al., 2000). Collegiate athletes have complex emotional systems that create rapid cycles from positive to negative moods without warning because of stressful situations in the athletic environment (Humphrey et al., 2000). For example, in hockey, a player could score a goal on one play, followed by a mistake leading to a goal on the next. This turn of events would elicit a rapid emotional transition from positive to negative, and due to this instability, athletes are susceptible to chronic, long-lasting problems (Humphrey et al., 2000). For a situation to be considered chronic, there needs to be a repeated imbalance between the perception of the demand and the coping resources available to satisfy the negative situation because this will increase stress levels (Hiebert, 2002). As such, the study of coping in collegiate athletes is certainly warranted because of its influence on long-term stress.

Dealing with the emotional response to stress in collegiate sport is difficult due to the passion and commitment exhibited by athletes toward their dual roles—their commitment to both sport and academics (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010). These individuals must often balance multiple commitments, which results in numerous stressful situations. Stress is considered to be a highly individualized and subjective perception; meaning the way people view stress can vary. As such, factors that induce stress can be general or specific in nature. One subgroup of athletes that tend to experience excessive stress is those transitioning into first-year university. These first year athletes often feel unprepared and lack the skills necessary for academic success (Dilley-Knoles, Burnett, & Peak, 2010). These specific stressful situations are common in sport, particularly in areas such as performance expectations (Ayers et al., 2012; Dilley-Knoles et al., 2010). When presented with stressful situations, a broad focus is important because of the various activities and responsibilities to which these athletes must commit. Although it only represents one potential stressor among many, Ayers and colleagues (2012) found the importance placed on an athlete's academic eligibility in sport to induce increased levels of stress. Other examples include, having the necessary finances in place, to balancing work, family, and social activities (Devonport, Lane, & Biscomb, 2013; Humphrey et al., 2000; Tamminen & Holt, 2010).

Although these stressors vary, the literature supports the notion that with collegiate athletics, the major source of stress is balancing academic success with sport demand (Humphrey et al., 2000). For example, roughly 95% of male athletes 85% of female athletes found academics (e.g., exams) to be the most stressful (Humphrey et al., 2000). In addition, this stress was augmented when performance was inhibited due to

time restraints (e.g., conflicts for test and sport preparation) (Humphrey et al., 2000). This overwhelming time demand for balancing these commitments has been supported (Ayers et al., 2012), and the pressure to perform athletically often takes priority over academics (Dilley-Knoles et al., 2010). Ayers and colleagues (2012) reported that 86% of athletes missed class time due to athletic conflicts, but only 2-3% reported missing athletic contests for other commitments. Unfortunately, the selection of sport participation over academics can have several negative consequences. For example, collegiate athletes often miss many of the benefits available to them in college. Potuto and O'Hanlon (2007) found that NCAA Division I athletes were being deprived of a complete college experience because of the time spent with athletics. A complete college experience includes activities that lead to ample personal growth (Potuto & O'Hanlon, 2007). In addition, due to the increased emphasis on collegiate athlete's involvement in sport, their educational aspirations may suffer due to the risk of missing out on important career enhancing opportunities such as internships (Potuto & O' Hanlon, 2007). While these threats are common to most collegiate athletes, their reactions to them may be contingent upon the sports for which they are involved.

The different reactions to these threats vary by sport and are typically categorized as team (interdependent; e.g., soccer) or individual (independent; e.g., running) (Evans et al., 2012). One misconception of individual sport is that these athletes do not spend time together or rely on teammates to build important interpersonal relationships (Evans et al., 2012). These athletes do in fact interact, and this forms a dynamic that needs to be distinguished from that of team sports. Individual sport can be defined as activities that do not require other individuals to complete a task, and can have specific characteristics

such as (1) the use of team scores, (2) training that requires the presence of teammates, and (3) distinct leaders and roles (Evans et al., 2012). Thus, athletes who are independent when performing a specific task still rely on a group in different ways (e.g., training) to perform that task optimally.

The sport team interdependence typology was developed to demonstrate the influence of the dynamics within groups that are traditionally viewed as independent. This typology categorizes three specific types of interdependence: (1) integrated (e.g., hockey), (2) segregated (e.g., baseball), and no task interdependence (e.g., swimming) (Evans et al., 2012). This group typology also considers: (1) group outcomes during competition (e.g., team scores) and (2) group members influence on personal goals (e.g., competing directly against one another) (Evans et al., 2012). Interdependence can be broken down into several distinct types. For individual sport athletes, the perception of belonging to a group is important for placing them in a specific type of interdependence (Evans et al., 2012). For example, an athlete who competes against his teammates in a race, but whose points count towards the total group championship would be considered to have collective interdependence (Evans et al., 2012). Collegiate swimming would fall under this collective classification system because despite having individual goals, all points are added to a total group championship. Therefore, notwithstanding the individual nature of swimming, there appears to be a social influence component involved due to the extensive amount of time spent with teammates (e.g., travelling and training).

Traditionally, team sports often involve fewer practices and more games compared to individual sport, which involves more practices and fewer competitions. Swimming is an individual sport where athletes devote most of their time to training

instead of competing. For example, a swim team could train six times a week for several months without competing. Not surprisingly, different stressors are experienced during such extensive training periods (Nicholls et al., 2007). In fact, a recent study found that among NCAA Division I swimming teams, most coaches included an over-training component within their training programs (Tobar, 2012). Furthermore, Silva (1990) determined that training stress is a learned response that helps adapt to training. When negative adaptations occur, it is believed that an imbalance exists between training demands and coping resources (Silva, 1990). Interestingly, during the over-training component, athletes experienced greater symptoms of depressive mood, fatigue, and decreased vigor (Tobar, 2012). These results are supported by Lazarus (1974), who found that stress is influenced by a physiological component, which takes into account symptoms such as fatigue. Not surprisingly, due to over-training, high performance athletes are subject to various forms of stress not present in the non-athlete population (Hill, Hall, & Appleton, 2010; Tamminen & Holt, 2010). For example, whereas exercise can provide a buffering effect for stress in the general population (Josefsson, Lindwall, & Archer, 2014), this is not typically an option for athletes due to their required training loads (Humphrey et al., 2000). Considering that exercise is not a viable means to buffer stress, athletes must use a variety of other coping strategies.

Stress Appraisal and Coping

Recognizing the negative influence of stressful situations, and the importance of the stress appraisal process are crucial elements in the development of coping mechanisms. Understanding the manner in which individuals cope under such circumstances is critical (Levy, Nicholls, & Polman, 2011). Coping can be defined as

constantly changing cognitive and behavioural efforts to manage specific or internal demands that are perceived as stressful (Lazarus, 1999). Hiebert (2002) identified two ways in which stress can be controlled: (1) decreasing the imbalance between perceived ability and demand from the situation and (2) calming the stressful reactions individuals have when their capabilities are overloaded. Individuals who have good coping skills are more likely to face the situation and reduce their chances of overtaxing their system via resources such as stress management (i.e., coping), which is essential to help cope with any negatively perceived event (Hiebert, 2002).

Coping in sport has typically driven by two theoretical perspectives: trait or transactional (Hiebert, 2002). The trait theory posits that individuals cope in a consistent manner across situations and without regard for environmental factors (Nichols & Polman, 2007; Roth & Cohen, 1986). Here, athletes are classified as having stable, unchanging, coping styles (Nicholls & Polman, 2007).

One aspect commonly discussed with regard to the trait theory is the role of personality in coping (Allen et al., 2011). Personality is defined as psychological qualities that contribute to how an individual thinks or behaves (Allen et al., 2011). The five-factor model of personality was developed and applied to sport to introduce various types of personalities and traits, including: (1) extraversion, (2) neuroticism, (3) openness, (4) agreeableness, and (5) conscientiousness (Allen et al., 2011). Research has identified that athletes tend to score higher on extraversion and lower on neuroticism in comparison to the general population (Allen et al., 2011). Interestingly, higher levels of extraversion and conscientiousness are associated with problem-focused coping in athletes, whereas higher levels of neuroticism have been linked to emotion and avoidance-focused coping (Allen

et al., 2011). Recent research indicates that individuals have an underlying personality that predisposes them to certain coping styles (Allen et al., 2011). For example, athletes with 20 years of experience in sport were found to have personality traits that determined their coping styles in certain situations (Allen et al., 2011).

Alternatively, the second theoretical perspective on coping is based on the transactional approach. This approach suggests that both personal and situational factors interact in a complex and dynamic manner strongly influencing an individual's coping preferences (Nicholls & Polman, 2007; Parkes, 1986). In the transactional theory, individuals' cognitions and behaviours will vary to react to internal demands that deem the situation stressful (Nicholls & Polman, 2007). Specifically, coping in athletes is considered a learned response and is highly malleable during the presence of stressful situations (Tamminen & Holt, 2010).

In applying these theories (i.e., trait and transactional) to coping research, two general types of coping styles have been advanced based on macro and micro levels (Nicholls & Polman, 2007). At the macro level, there are higher order coping dimensions that differ based on their function and intention (Crocker, Kowalski, & Graham, 1998). At this level, coping may be categorized under two main approaches: problem-focused (strategies aimed at directly altering the stressful situation) and emotion-focused (strategies aimed at dealing with the urgency and distress of the current situation) (Nicholls & Polman, 2007). Based on the trait theory, athletes who are extroverted will likely choose more problem-focused oriented coping styles, whereas people who are neurotic will often opt for emotion-focused coping (Allen et al., 2011). As we recognize

that individuals react to similar stressors in different ways, a proper understanding of coping styles becomes increasingly important.

Although these are the two main areas of coping at the macro level, research has also suggested that multiple factors play a role in the development of coping style (Nicholls & Polman, 2007). Avoidance coping is a maladaptive style that athletes use although it is the least favourable (Allen et al., 2011). Avoidance coping involves behavioural and psychological efforts to remove the stressful situation, which can result in the individual cognitively distancing him or her from that situation (Nicholls & Polman, 2007). Conversely, research has also identified an approach coping style, which is an athlete's attempt to confront and reduce the source of stress (Roth & Cohen, 1986). This type of coping style can range from increasing effort to improved planning, and involves taking a direct action approach to eliminating the stress. Finally, appraisal-focused coping has also been identified, which involves re-evaluating a situation to make it less important (Nicholls & Polman, 2007).

With regard to the micro level of coping, specific subtypes characterize these higher-order coping styles. For example, problem-focused coping includes actions such as planning and goal setting (Nicholls & Polman, 2007). Emotion-focused coping includes such actions as counselling and relaxation (Nicholls & Polman, 2007). Finally, avoidance-focused coping includes actions such as quitting or disengagement (Nicholls & Polman, 2007). Avoidance coping seems to connect well with the Shame coping style identified by Ellison and Partridge (2012), which is derived from the Compass of Shame, originally developed by Nathanson (1992).

There are four poles that shape the Compass of Shame. The withdrawal pole suggests that athletes will acknowledge their experiences as negative and attempt to hide from them (Ellison & Partridge, 2012; Nathanson, 1992). The attack-self pole suggests that athletes acknowledge the experience as negative, accept its message as valid, and turns the anger inward (Ellison & Partridge, 2012; Nathanson, 1992). Alternatively, the avoidance pole suggests that individuals do not acknowledge the negative experience or accept the message as valid (Ellison & Partridge, 2012; Nathanson, 1992). In this instance, they will attempt to distract themselves from feeling the experience. At the attack-other pole, the individual attempts to make another individual feel worse about the negative experience to deflect it away from him or her (Ellison & Partridge, 2012; Nathanson, 1992). The avoidance and attack-other poles are similar to the categorization by Nicholls and Polman (2007). The coping styles set forth by Nathanson (1992) are maladaptive and focus on how the individual fails to cope with the stressor. From this perspective, it is important to note that awareness is critical for adaptation and coping.

There is a large body of literature that accounts for the coping styles of collegiate athletes (Nicholls et al., 2009; Nicholls & Polman, 2007; Nicholls et al., 2007; Tamminen & Holt, 2010). The goodness-of-fit model was developed to show that specific coping styles are better for certain situations (Folkman, 1991). This model seems to support the transactional model, which states that athletes will cope differently in certain situations. Furthermore, this model suggests that an athlete uses problem-focused coping when they believe the problem is in their control and emotion-focused when it is not (Nicholls & Polman, 2007). Hammermeister and Burton (2004) found that athletes who used more emotion or avoidance focused coping had higher cognitive anxiety. Problem-focused

coping was found to produce a positive affect whereas emotion-focused produced a negative one (Ntoumanis & Biddle, 1998). With respect to avoidance-focused coping, it has been found to influence negative outcomes such as athlete burnout in sport (Hanton, Neil, Mellalieu, & Fletcher, 2008). In fact, Nicholls et al. (2009) found ineffective coping styles to lead to decreased performance or even withdrawal. Furthermore, Levy et al. (2011) found that coping played a mediating role in athlete self-confidence when dealing with slumps in performance. Therefore, the prevalence of these negative outcomes increases when athletes do not possess an appropriate repertoire of coping skills for the stressful situation experienced (Tamminen & Holt, 2010). It was also found that when athletes failed to cope with chronic non-sport stressors, it could affect their confidence and decision-making abilities (Devonport et al., 2013). This is relevant due to the commitments that athletes need to balance in order to be successful. As discussed earlier, swimmers undergo major stress during training cycles. When non-sport stressors are added, the athlete could be forced to balance too many commitments. Research has supported the idea that when a situation is too demanding, an individual will have difficulty using effective coping mechanisms (Hiebert, 1983; Hiebert, 2002; Proctor & Boan-Lenzo, 2010).

An individual who is overloaded from a stressful situation is at higher risk to exhibit problem behaviours. Problem behaviours are becoming more common amongst athletes as they frequently find themselves unable to cope (Armstrong, & Oomen-Early, 2009). One such problem behaviour commonly cited amongst college athletes is the consumption of alcohol (Humphrey et al., 2000). Wilson, Pritchard, and Schaffer (2004) found that collegiate athletes consume alcohol more frequently when compared to non-

collegiate athletes. Not surprisingly, drinking behaviours as a coping style have received attention in past research (Humphrey et al., 2000), and recent work suggests collegiate athletes often resort to drinking behaviours to cope with the high demands of both sport and academics (Wilson et al., 2004).

Coping is a very widespread and difficult process because of the individual discrepancies of perceptions of stress (Nicholls et al., 2009). In addition to varying perceptions, sport type has also been identified as an important factor. Research suggests that individual sport athletes tend to employ more coping strategies because of the increased presence of stressors (Nicholls et al., 2007). Therefore, future work would benefit from directed research that specifically focuses on individual sports (i.e., swimming) as the type and frequency of stressors differs from team sports (Nicholls et al., 2007; Nicholls & Polman, 2007). As Wilson and his colleagues (2004) found, athletes experienced heightened periods of stress because they lacked effective resources and effective coping mechanisms.

Stress and coping in sport has several implications in relation to athlete mental health, and although recent research has suggested stress can be viewed from a positive perspective and potentially used as a tool for enhanced performance (Lance, 2004), the literature predominantly supports its debilitating influence, largely due to ineffective coping mechanisms (Hiebert, 2002; Humphrey et al., 2000). In summary, it appears that the mere employment of a coping style does not guarantee its effectiveness, but rather, the identification and employment of the appropriate coping style is critical to its success. The research clearly identifies the importance of effective coping mechanisms in periods of heightened stress.

Depression and its Relation to Stress and Coping

The previous sections served to highlight the stress-appraisal-coping process, and its relevance to intercollegiate populations. This section will identify some of the negative consequences occurring as a result of chronic stress and ineffective coping. Humphrey and his colleagues (2000) found that when stress becomes chronic and athletes are not coping properly, they could suffer from emotional or mental health issues, such as depression. This notion builds upon previous research, which found that individuals stress response occurs via cognitive and emotional components (Hiebert, 1983; Lazarus, 1974). Interestingly, these emotional or mental issues do not necessarily emerge immediately and can take time to manifest before becoming harmful for individuals (Hiebert, 1983; Humphrey et al., 2000; Miller-Tait Spriddle, 2004).

One particular population affected by this relationship is intercollegiate athletes. These individuals are considered to be a unique group who face a variety of stressors compared to non-athletes (Lu, Hsu, Chan, Cheen, & Kao, 2012). These athletes must find a way to deal with the wide variety of stressors, because it can negatively influence their mental health. In a study done by Lu and his colleagues (2012), they found athletes who demonstrated greater levels of stress were found to have both reduced performances and emotional stability. The longevity of stress is often dependent upon the coping style chosen by the individual. One potential scenario, which can result in prolonged stress, is through the use of maladaptive-focused coping. It must be recognized that any particular coping style can lead to chronic stress, as the stress appraisal relationship depends largely on how effective the coping mechanism is for the individual (Hiebert, 2002; Miller-Tait

Spriddle, 2004). However, maladaptive-focused coping involves actively avoiding a situation, which in the short and long-term is ineffective (Vlaeyen & Linton, 2000).

Using coping styles similar to avoiding a situation can lead to psychological disorders such as depression (Ottenbreit & Dobson, 2004). Depression is a common form of mental illness and its impact on society is significant (APA, 2013). Depression can impact a person's cognitions and behaviour, potentially leading to clinically distressed impairment of daily life activities (APA, 2013; Proctor & Boan-Lenzo, 2010). It includes symptoms such as depressed mood, feelings of guilt and worthlessness, hopelessness, sleep disturbances, and psychomotor retardation (APA, 2013; Zhou, Zhu, Zhang, & Cai, 2013). Depression can be difficult to define because it includes several types of mood disorders (APA, 2013). The American Psychiatric Association (2013) uses depression as a category for mood disturbance that encapsulates disorders such as major depressive disorder.

Depression presents significant health and educational risks to collegiate students. One of the most common ages of onset for depression is between the ages of 20 and 30 (Gardiner, 2006). Research has shown that college student's physical and psychological states decline within a year of starting post-secondary education (Pritchard et al., 2007; Proctor & Boan-Lenzo, 2010). The incidence of depression has been shown to be a predictor of overall health-related quality of life and significantly and negatively influences academic performance (Deroma et al., 2009). In addition, athletes appear to be even more susceptible than the general student population as they experience greater amounts of stress due to their dual role commitments (Proctor & Boan-Lenzo, 2010).

Depression is one of the most common mental health disorders to occur in sport (Proctor & Boan-Lenzo, 2010). A common perception amongst the research is that exercise has the potential to reduce depressive symptoms among the general population; however, Leith (1998) highlighted the reduction of mood enhancing effects when exercise was done with too great an intensity and frequency. In addition, when the frequency increased, so too did the potential for depressive symptoms (Leith, 1998). Weigand, Cohen, and Merenstein (2013) surveyed past and present collegiate athletes and found that 16% of current athletes showed some level of depression, which was higher than the retired athletes. Furthermore, a recent study on professional football players revealed that one in four current athletes suffer from bouts of depression (Leicester, 2014). Interestingly, in the same study, one in three (33.3%) retired football players reported experiencing depression.

Research pertaining to the relationship between athletics and depressive symptoms has gained recent attention in the literature (Proctor & Boan-Lenzo, 2010). Specifically, two main theories have been advanced. The first is the distress-buffering nature, which states that athletic involvement has mental health benefits and decreases the risk of mental health issues (Proctor & Boan-Lenzo, 2010). As one example, Bäckmand, Kaprio, Kujala, and Sarna (2003) found that physical activity played a significant role in reducing depressive symptoms in athletes. Unfortunately, one limitation of this view is that certain benefits (e.g., social support) are not available to all athletes (Proctor & Boan-Lenzo, 2010).

The other common perspective is the distress-contributing nature of athletics. This theory suggests, “when athletes enter elite-level (e.g., intercollegiate and professional) of

sport participation, there are numerous associated stressors they must endure” (Proctor & Boan-Lenzo, 2010, p. 205). The distress-contributing theory applies to collegiate athletes because they typically struggle with finding time to maintain their dual roles (Ayers et al., 2012; Proctor & Boan-Lenzo, 2010). Furthermore, Hammond, Gialloredo, Kubas, and Davis (2013) found the prevalence of depression in athletes to be greater than the frequency reported in the general population. In fact, they revealed that 68% of athletes met the criteria of a major depressive episode (Hammond et al., 2013). Note however, these athletes were only tested after competitive cycles, and the reported percentage is much greater than other recent work. For example, in comparison, Nixdorf and colleagues (2013), found only 5-20% of their participants showed high levels of depressive symptoms. Therefore, while a discrepancy certainly exists, both studies indicate the presence of depressive symptoms in athletes. Interestingly, these symptoms have also been found to linger, as retired collegiate athletes experienced depression even after they exited the sport (Weigand et al., 2013).

One of the many negative outcomes related to depression is its influence of high-risk behaviours (Armstrong, & Oomen-Early, 2009). Depressive disorders are the most common disorders present among two thirds of suicide victims, and these symptoms may be fundamental predictors and risk factors for suicide (Taliaferro, Rienzo, Pigg Jr., Miller, & Dodd, 2008). There are constant pressures that can burden an athlete at any given time (Proctor & Boan-Lenzo, 2010). Some of these pressures are fueled by two common misperceptions; only mentally strong athletes can compete at high levels, and that psychological disorders are rare (Hammond et al., 2013). This is an alarming issue, as depression in college athletes often goes untreated due to it being underreported based

on negative stigma (Weigand et al., 2013). Proctor and Boan-Lenzo (2010) found that there is a significant difference in depression levels based on status in collegiate and non-collegiate athletes. However, Mounsey, Vandehey, and Diekhoff (2013) found that students who worked 16-20 hours a week showed minimal levels of depression, which was not significantly different than those who did not work. The added stress created by the additional responsibilities and time commitment of working while managing school had little or no effect on depression levels. Results here were somewhat surprising considering that students who did not work had more time to socialize or complete their activities (Mounsey et al., 2013). Unfortunately, a direct comparison to sport cannot be made, as the stressors experienced in the working environment would certainly differ from those experienced by athletes.

As stated previously, stress can have a significant influence on depression (Proctor & Boan-Lenzo, 2010). Nicholls and colleagues (2009) found that athletes tend to experience stress during training. However, there have been limited studies that have addressed the issue of training stress and mood fluctuations. One example however, Berger, Grove, Prapavessis, and Butki (1997) found that athletes who were exposed to increased bouts of training tended to exhibit greater levels of depressive symptoms. When volume and intensity are increased at a high rate, collegiate swimmers seem to score high on depression, and this trend can linger and continue for a significant amount of time (i.e., a training cycle) if not addressed (Berger et al., 1997). However, there seems to be disagreement amongst the literature: one study found that among college students, swimmers reported reduced bouts of depression with their training (Berger, Owen, & Man, 1993). But despite some finding of positive impacts of training, the majority of

research seems to suggest that increases in training results in higher depressive symptoms (Berger et al., 1997; Tobar, 2012; Wilson et al., 2004).

Given the importance of stress and coping in the lives of athletes, there has been a plethora of research that has focused on these topics (Levy et al., 2011; Nicholls et al., 2009; Nicholls & Polman, 2007; Tamminen & Holt, 2010). Using coping and stress as frameworks, there has been a growing amount of research focused on how these influence athletes and their mental health (Ayers et al., 2012; Hammond et al., 2013; Proctor & Boan-Lenzo, 2010; Weigand et al., 2013).

Despite the growing quantity of literature available focusing on mental health and athletes, there are two limitations to current research. First, there are limited studies available for stress and its effects on depression in college athletes. Second, there is a limited amount of research that focuses on what type of coping styles are used when athletes are dealing with an increase in depressive symptoms. The current hypothetical study aims to address these issues by proposing two significant questions: (1) does stress influence changes in depressive symptoms in collegiate swimmers? (2) What effect do coping mechanisms have on the presence of depressive symptoms in collegiate swimmers? Although the proposed study is merely hypothetical, the chapters that follow will outline the research that would be undertaken to address these questions. For example, Chapter 3 will focus on research methodology, followed by Chapter 4, which includes a discussion based on expected findings using previous research as support.

Chapter 3: Methods

Participants

Given the fact the proposed study is not going to be conducted, the following section outlines the criteria of how I would have selected participants for the study. The participants that would have been targeted for the study are collegiate swimmers at select universities from the western Provinces of Canada (e.g., British Columbia, Alberta, Saskatchewan, and Manitoba). The inclusion criteria for involvement in the study are that the athletes be members of a Canadian Interuniversity Sport (CIS) Swim Team at a recognized university in Canada and belong to the Canada West Universities Athletic Association (CWUAA). The athlete must also be on the roster and eligible for competition. In order to be considered eligible, a swimmer must typically be registered in nine credits per semester and have above a 1.6 grade point average (GPA). These athletes must also be within the five years of competition eligibility for CIS. The athletes that would have been selected for the study would be determined eligible by their coach, when approached for participation. A convenience sample of 100 athletes would have been recruited from the University of Lethbridge, the University of Calgary, University of Manitoba, University of Victoria, University of British Columbia, University of Regina, Thompson Rivers University, and the University of Alberta. There are more Universities who participate in the CWUAA; however, these eight are the only ones with competitive swim programs. Of the 100 participants that would have been selected for the study, only 10-15 will be asked to complete bi-weekly mood journals for the duration of the study.

Measures

Given the fact this study will not be ran, the following section contains the measures that would have been selected for the study.

Demographic Form. Found on this form would have been background information about the participant that is pertinent to the purpose of the study. This form would have included items such as date of birth, sex, university enrolment, academics, eligibility, training load, and current academic and sport requirements. For academics, the form would have included items focused on the amount of classes and labs; amount of hours dedicated to those classes, and estimated study requirements. For athletics, the form would have included items focused on the amount of practices per week (both in and out of the pool), the time commitment to each of those practices, and any extra weekends that require more athletic commitment (e.g., competitions). The demographic information would have been the first inventory seen by the participants via Qualtrics. For the full demographic form, please see Appendix A.

Stress. The College Student Athletes' Life Stress Scale (CSALSC) (Lu et al., 2012) is a 24-item self-report stress inventory. The CSALSC examines college student athlete life stress from eight domains (academics, injury, coach relationship, family relationships, romantic relationships, interpersonal relationships, performance demand, and training adaptation), and respondents based on a likert scale ranging from 1 (never) to 6 (always) (Lu et al., 2012). The scale has adequate factorial structure, criterion validity, and reliability, with a Cronbach's alpha ranging from 0.66 to 0.88 (Lu et al., 2012). The current study would have involved items selected from the subscales of relationships, academics, and training because these domains were the most common

triggers of stress amongst college athletes, according to the literature (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010).

For the training domain, three items would have selected items from the CSALSC (Lu et al., 2012) and revised to more clearly articulate training for a swimming population (e.g., I am annoyed by my training load because it is too much for me). In addition, two items would have been developed based on the topics covered by Humphrey et al. (2000). For the academic domain, two items would have selected, (i.e., I am annoyed when preparing for exams and I worry about my academic skills because I do not know how to learn efficiently) (Lu et al., 2012). Three other items would have been developed using topics covered by Humphrey et al. 2000, (i.e., I worry I have too much school work, I am bothered by the lack of time available for academics, and I feel pressured by the high demand from my classes). For the relationship domain, five items would have been selected from the CSALSC (Lu et al., 2012). These items have been validated and cover a broad spectrum of interpersonal relationships that athletes are commonly involved in (e.g., I am annoyed by my disappointing relationship with my coach) (Lu et al., 2012). This measure is would have been called the College Student Athlete Stress Inventory (CSASI) and can be found in Appendix B.

Coping. The COPE scale (Carver, Scheier, & Kumari, 1989) is a 13-item inventory that focuses on problem and emotion-focused coping. Respondents treat each item as independent from the next and complete questions on a likert-type scale ranging from 1 (I usually don't do this) to 4 (I usually do this a lot), with higher scores indicating that the individual turns to that coping style more often than not. The total scores of each measure are combined to define the most commonly used coping strategy.

The Modified COPE (MCOPE) (Crocker & Graham, 1995) is the first coping scale developed for athletes and expanded upon the original COPE (Carver et al., 1989). Coping responses are assessed using 12 items, with nine used from the original COPE (Carver et al., 1989). The nine scales from the original COPE (Carver et al., 1989) are: active coping, seeking social support for instrumental reasons, planning, seeking social support for emotional reasons, denial, humor, behavioral disengagement, venting of emotion, and suppression of competing activities. The three added scales are self-blame, wishful thinking, and increasing effort. Each of the 12 scales is comprised of four items based on a likert-type scale ranging from 1 (not at all/little) to 5 (used very much), focusing on only one perceived stressful situation (Crocker & Graham, 1995).

The Coping Function Questionnaire (CFQ) (Kowalski & Crocker, 2001) was developed to modify the MCOPE (Crocker & Graham, 1995) and apply it to sport. The CFQ (Kowalski & Crocker, 2001) includes 18 items that measure participants on three domains: problem (six items), emotion (eight items), and avoidance (four items) based coping. The CFQ (Kowalski & Crocker, 2001) differs from the previous scales due to the inclusion of the avoidance domain. The first part of the scale uses a dichotomous response format (yes/no). If a person responds, *yes* to the question, they are directed to the second part of the scale involving an anchored graded response rated from 1 (little) to 4 (very often) (Kowalski & Crocker, 2001). Next, each respondent decides whether or not they use each coping strategy in response to a stressful situation. Item scores are determined by taking the mean of the responses from the three measures with the higher scores showing more frequent coping styles (Kowalski & Crocker, 2001).

The use of the CFQ (Kowalski & Crocker, 2001) is important for coping because of the high consistency between the items. Initially, the CFQ (Kowalski & Crocker, 2001) had an internal consistency greater than 0.80 in a group of adolescent athletes. The acceptable internal consistency for measures of this nature is greater than 0.70 (Nunnally & Bernstein, 1994). The CFQ (Kowalski & Crocker, 2001) provided evidence of convergent validity due to the correlation with items found in the COPE (Carver et al., 1989). Currently, the CFQ (Kowalski & Crocker, 2001) has not been applied to collegiate athletes, as the original use of the scale was meant for adolescents. However, this measure is important because the literature has supported the use of these domains across sport (Nicholls & Polman, 2007). The CFQ (Kowalski & Crocker, 2001) would have been the coping measure used for this study. The CFQ (Kowalski & Crocker, 2001) would have been administered via Qualtrics. The copy of the CFQ (Kowalski & Crocker, 2001) can be found in Appendix C.

Depression. The Beck Depression Inventory, Second Edition (BDI-II) (Beck, Steer, & Brown, 1996) is used as a self-report measure of depressive symptoms in clinical and non-clinical populations. The BDI-II is a 21-item measure of depressive symptoms experienced during the past week, including measures for somatic and cognitive-affect domains. There are 15 factors that load on cognitive affect (e.g., sadness, crying, guilty feelings) and six factors that load on the somatic dimension (e.g., loss of energy, change in sleeping pattern, change in appetite) (Beck et al., 1996). The internal consistency demonstrated with college students was found to be 0.87 for cognitive-affect and 0.74 for somatic (Storch, Roberti, & Roth, 2004). The BDI-II has adequate factorial validity loaded on two factors (cognitive and somatic) (Arnau, Meagher, Norris, &

Bramson, 2001). The BDI-II has been shown to have adequate convergent and criterion related validity when compared to other mental health subscales; correlations were adequate (0.65) (Arnau et al., 2001). In order to interpret the scores of the BDI-II, the sum of all items needs to be calculated. The highest possible total is 63 and the lowest is 0. The scores can be classified as 0-13 (minimal depression), 14-19 (mild depression), 20-28 (moderate depression), 29-63 (severe depression) (Beck et al., 1996). The BDI-II (Beck et al., 1996) would have been administered via the Q-global scoring system available through Pearson Assessments Canada. The Q-global scoring system allows for a researcher to send an email link of the inventory to the participants. This inventory is subsequently completed online and all data are submitted and regulated through the researchers account. The researcher can then access the scores and produce reports for the participants.

Mood Journal. The mood journal was designed to qualitatively determine more in-depth patterns of emotional states as perceived by the participant. The aim of the journal would have been to address stress, coping, and mood in greater detail. Specifically, the journal contains 11 items, with two items assessing the source and amount of stress, two addressing coping mechanisms used to address the stressful situation, and three addressing mood. The mood journal also asks how many hours the athlete is dedicating to swimming and school. Finally, the mood journal contains one question focused on the amount of meters swam per workout. The types of questions range from dichotomous, to likert-type, to open-ended responses. Dichotomous questions help categorize data into two values (e.g., male and female) (Gall, Gall, & Borg, 2007). Likert scales allow for the individual to rate their level of agreement about a particular

topic (Gall et al., 2007). These types of questions give a guided opinion for a particular topic. Open-ended questions have the advantage of allowing for the possibility of spontaneous responses from the individuals without forcing a particular response (Reja, Manfreda, Hlebec, & Vehovar, 2003). Furthermore, open-ended questions are used to explore outlying responses to the close-ended responses (Reja et al., 2003). The mood journal would have been distributed via Qualtrics bi-weekly for the duration of the study, and can be found in Appendix D.

Procedure

The following section contains the procedures that would have been followed if the study were conducted. Prior to the beginning of the study, an application for approval from the Human Subjects Research Committee (HSRC) at the University of Lethbridge would have been submitted. Participant information would remain completely confidential, and the questionnaires would have been administered electronically via Qualtrics and the BDI-II (Beck et al., 1996) would be administered electronically via Q-Score Global Reporting provided by Pearson Assessments.

Once approval from the HSRC is granted, initial contact would be made with Canada West University coaches to explain the nature and purpose of this study. Given each coach's approval, links connected to the questionnaires would have been sent to invite participants and allow swimmers to access inventories. Names and responses would remain confidential. Once accessed, the ethics statements surrounding disclosure and other pertinent information would have been provided to them and consent would need to be provided prior to completing the questionnaires. All of the quantitative inventories except for the BDI-II would have been found on Qualtrics. Following the

completion of the items on Qualtrics, the participants can open the link that directs them to the BDI-II (Beck et al., 1996).

Considering that college athletes have been found to show heightened periods of stress throughout a semester, all quantitative measures would have been administered via a pre- and post-test. Baseline measures (i.e., pre-test) would be administered in September, which would coincide with the beginning of classes and training programs. This is presumably a less stressful period during the season/semester, which will serve as a comparison to the post-test period in December (a period when students have final exams and are peaking in terms of their training loads). In-between the pre- and post-tests, the mood journals would have been completed by a group of participants (N = 10-30) who would be randomly selected via Qualtrics. These individuals would have completed eight mood journals in two-week intervals. The aim of the post-test is to identify any significant patterns occurring when compared to the initial measurement. The pre- and post-tests would have followed the same protocol and all data would have been computed using the Statistical Package for the Social Sciences (SPSS) statistical analysis software.

Data Analysis

The following section contains the data analysis that would have been used to analyze the responses on each of the measures. Each test in the following section would have been used for both quantitative and qualitative analysis of the data. Preliminary analysis of the descriptive variables would have involved statistics for numerical values such as mean, standard deviation, and error variance. Descriptive variables are defined as a mathematical method for summarizing information about variables within a sample

(McGrath, 2011). In the current study, descriptive variables will be collected for both independent and dependent variables. A prospective observational design would have been used to explore the effects that stress and coping have on the presence depressive symptoms (e.g., crying and sadness). A prospective observational design follows a participant over time while collecting data in the process (Thiese, 2014).

Stress. The first set of data from the measures to be analyzed would have been from the stress scale (CSASI). Using descriptive statistics (McGrath, 2011), responses from each of the items would be collected and calculated into an average value. Specifically, confirmatory factor analysis (CFA) would have been used to determine the factorial validity of the CSASI. The purpose of a CFA is to use correlational statistics to discover pre-existing latent variable models (i.e., groups of attributes that cannot be directly observed) (McGrath, 2011). The 15-item CSASI contains three latent variables (e.g., social, training, and school stress) and contains five items for each variable. The CFA would have allowed for the discovery of factors that each of the items could be loaded onto. Emerging from the CFA would be covariance, which is defined as an unstandardized correlation coefficient (McGrath, 2011). This coefficient would determine how each item and factor relates to one another. A CFA has multiple uses when trying to explore latent variables (McGrath, 2011). Specifically for this study, CFA would help determine factorial validity. Factorial validity is the degree to which the factors revealed by the CFA are consistent with the conceptual understanding of the construct (McGrath, 2011) and for the current study, the stress factors would need to be compared to another reasonable measure of stress such as the College Student-Athletes' Life Stress Scale (Lu et al., 2012).

Coping. The second set of data to be analyzed would have been from the CFQ (Kowalski & Crocker, 2001). Validity and reliability were achieved for use with adolescents (Kowalski & Crocker, 2001). However, these would need to be addressed when using the CFQ (Kowalski & Crocker, 2001) with college athletes. For the CFQ (Kowalski & Crocker, 2001), I would have followed the same procedure that was done on the stress inventory because I would like to determine factorial validity for the use with college athletes. The CFQ (Kowalski & Crocker, 2001) is composed of 18 items with three latent variables (problem-focused, emotion-focused, and avoidance-focused coping) and contains six, eight, and four items respectively.

Depression. For the BDI-II (Beck et al., 1996), raw scores from items would be summed and combined to form a total amount depression. Furthermore, a CFA would be performed to determine if items load onto two factors (i.e., cognitive and somatic) of depression as discovered by Beck and his colleagues in 1996. Furthermore, each item that is associated with one of the two factors (cognitive and somatic) would be summed with each of the factors means being calculated to determine which factor plays the most role in determining overall depression (total BDI-II score).

Research Questions. The first question posed by the current study is: does stress influence changes in depressive symptoms in collegiate swimmers? To address this question, the first part of the research design would focus on the effect of the construct of stress using three independent variables (sport, academic, and social) on the construct of depression using two dependant variables (cognitive and somatic symptoms). For the current study, a multivariate correlational statistic approach would have been used (Gall et al., 2007). The specific test used would have been a multiple regression. Multiple

regression analysis is used to analyze the extent to which two or more independent variables relate to a dependant variable (Martin & Bridgmon, 2012). In the current study, this would have analyzed to what extent the three independent variables (sport, academic, and social stress) effect the two dependent variables (cognitive and somatic symptoms). Furthermore, I would have liked to use a factorial ANOVA (Martin & Bridgmon, 2012) to assess the three independent stress variables and compare it to an overall amount of depression, which is measured by the overall sum of items scores on the BDI-II (Beck et al., 1996). Ward (2006) argues there is conflicting evidence regarding the statistical structure of the BDI-II (Beck et al., 1996). For example, he argues the BDI-II has two latent variables that aim to measure depression (i.e., cognitive and somatic), but also mentions there is evidence that BDI-II items are influenced by a general factor of depression (Ward, 2006). Given this argument, there is a case to run a multiple regression for both scenarios (i.e., depression, which has cognitive and somatic dependant variables and depression, which is a dependant variable on its own).

The second question of the current study is what effect do coping mechanisms have on the presence of depressive symptoms in collegiate swimmers? In order to address this research question, a multiple regression analysis would have been run to determine what effects the independent variables of coping (i.e., problem-focused, emotion-focused, and avoidance-focused coping) have on the dependent variables of depression (i.e., cognitive and somatic symptoms). However, as Ward in 2006 argues, depression could be a general dependent variable without specific factors. Thus, there is a case made to run a multiple regression to determine the effect the coping independent variables have on depression without depression's two factors.

For the proposed study, I would have expected a mediating relationship existing between the variables. A mediating relationship exists when the effect of an independent variable on a dependant variable depends on passing through a third variable (McGrath, 2011). To identify this relationship, a path analysis would have been performed (McGrath, 2011). A path analysis is used to identify relationships amongst variables. For the proposed study, the independent variables (i.e., sport, academic, and social stress) must pass through the mediating variables (i.e., problem-focused, emotion-focused, and avoidance-focused coping) to reach the dependent variable(s) (i.e., cognitive and somatic or general depression). A path analysis is used as an extension of multiple regression to determine the magnitude and strengths of the effects between variables (Lleras, 2005).

With respect to the mood journals, an analytic induction approach would have been used. Analytic induction involves developing themes and patterns from an examination of data (Gall et al., 2007). For these journals, three specific questions types would be used. First, a dichotomous question type would have been used to answer whether or not a participants has experienced stress in the last two weeks. Dichotomous questions are categorical nature with only two values as possible options. In this case, participants have the option of answering *yes* or *no* to this question. Second, likert-type questions would have been used to answer questions ranging from commitments (e.g., sport and academics) to mood. Likert scales are measures that ask individuals to determine their level of agreement about a specific topic (Gall et al., 2007). Specifically, likert-scales would be used in a variety of ways in the mood journal. The first three questions of the mood journal would use likert-scales to try and establish how much commitment an individual has to both academics and sport commitments (e.g., how many

hours do you dedicate to your academics per week?). Furthermore, the likert scales would be used to assess questions about stress (e.g., how stressed were you), coping (e.g., how successful were you in reducing your stress), and mood (e.g., how have you been feeling emotionally). Finally, open-ended questions would be used to assess stress, coping, and mood. Open-ended questions allow participants to respond without being limited to a particular option (Reja et al., 2003). The open-ended questions in the mood journals would have allowed participants to respond with perceived descriptors as opposed to forced response. For example, participants would be asked if their mood has been better, worse, or no different in the last two weeks using descriptive words about how they were feeling using an open-ended response format.

By including the open-ended questions in the mood journals, data would need to be compiled to create themes. By coding, an interpretive analysis approach would have been used to look for common themes among the sources of stress, depressive symptoms, and coping (Gall et al., 2007). Coding is the process of systematically analyzing data to look for common occurrences (Wilkinson, 2004). When determining a coding system, a unit of analysis would need to be determined. In this case, the coding system would have been the participants' responses written down on the three open-ended questions. For the stress aspect of the mood journal, the coding system used for each of the participants responses would fall under one of four categories: Social Stress (SS), Sport Stress (SPS), Academics Stress (AS), and Other (OTH). For the coping aspect of the mood journal, participants responses would have been coded under one of three domains: Problem-focused coping (PFC), Emotion-focused coping (EFC), and Avoidance-focused coping (AFC). Finally, with respect to the mood section of the mood journal, participants'

responses would fall into one of two categories: Cognitive (COG) and Somatic (SOM) symptoms. Following the use of this coding system, participant responses will be quantified to find the most common responses.

For the purposes of this study, mood journals would have been distributed every two weeks for a total of eight journals. This would have allowed for a comparison of any trends or patterns throughout the course of the study.

Chapter 4: Discussion

The current research project was intended to address two specific questions focusing on stress, coping, and depression. First, did stress influence changes in depressive symptoms in collegiate swimmers? Second, what effect did coping mechanisms have on the presence of depressive symptoms in collegiate swimmers? Considering that there were no results from the proposed study, the following discussion section outlines expectations based on findings from previous research. Before being able to hypothesize what would have been found generally, I would discuss what I would have expected the results to show if I had actually conducted the study.

Stress

During the pre-test of the CSASI, I would have run a CFA to determine construct validity. I would have expected the CFA to confirm the three-factor structure of academic, sport, and social stress. In order to consider a good fit for the instrument, the Comparative Fit Index (CFI) would need to be greater than 0.90, the Root Mean Square Error of Approximation (RMSEA) would need to be less than 0.08, and the Standardized Root Mean Square Residual (SRMR) would need to be less than 0.05 (Lu et al., 2012). I expect results would have shown that the three-factor model on the CSASI would have

similar findings to the study performed by Lu and his colleagues (2012). I would have anticipated similar results to those found by Lu et al., (2012) because several items for the proposed study were selected from their inventory. For example, items such as *I am annoyed with the training program now* loaded significantly high at 0.80 onto training adaptations (Lu et al., 2012).

With respect to the CSASI, I would expect the results to yield a strong reliability through good internal consistency of the items between the three domains of stress (i.e., academics, training, social). Again, I would have relied on the findings from Lu et al. (2012), which found the reliability of each factor to range between 0.66-0.88. I would further expect the relationship among each of the factors to be moderately correlated, thus, representing an adequate measure of stress. In support of this finding, Lu et al. (2012) found that domains such as training adaptation and academic requirements were moderately and significantly correlated ($r = 0.47$).

During the pre-test, descriptive statistics were used to find means from the demographic form and the CASASI. With respect to the demographic form, I would have expected results to show low means for the questions about training load, academic commitment, and sport commitment. For the CSASI, I would have expected results to show low means of academic and training stress as participants would have just started both of these when the pre-test was administered. However, I would have expected higher averages in the social stress domain. First-year athletes may have issues about being isolated, while more experienced swimmers may struggle with their relationship with a coach (Lu et al., 2012).

Given the results from the pre-test, I would have expected the post-test to show higher means on the demographic form, as well as in all stress domains. Training load would have presumably increased significantly to the point where an overtraining phase was established. As discussed by Tobar (2012), coaches will include this overtraining component in their programs. Furthermore, I would have anticipated that the academic and sport commitment items on the demographic form would yield significantly higher means than recorded in the pre-test. Due to the increased academic demands, I would expect an increase in means on the Academic Stress domain. I would have expected these scores to be higher during the final exam period because Humphrey and colleagues (2000) found athletes to commonly perceive academics as one of the biggest stressors experienced. Furthermore, these stressors were heavily based on exam and test preparation. These proposed findings are supported in the literature as students who approached final exams were more likely to experience anxiety, depressive symptoms, and negative changes in health (Ogden & Mtandabari, 1997).

Despite the changes in means for the training and academic stress domains of the CSASI, I would expect mixed scores on the social stress domain for three reasons. First, considering that athletes spend a significant amount of time training with teammates, their social stress may not be high because of strong relationships formed within a team (Evans et al., 2012; Lu et al., 2012). Second, Ogden and Mtandabari (1997) found that social support actually moderated the effect of stress when students were approaching final exams. Finally, it may also be possible that results indicate higher social stress due to the limited amount of time athletes have to develop social connections outside of their

sport because of their multiple commitments (Ayers et al., 2012; Potuto & O' Hanlon, 2007; Proctor & Boan-Lenzo, 2010; Storch, Storch, Killiany, & Roberti, 2005).

Coping

With regard to coping, the first test I would have run for the CFQ (Kowalski & Crocker, 2001) would be a CFA. I would have expected results of the CFA to show the three-factor model suggested by Kowalski and Crocker (2001) was an adequate fit for the data. To come to this conclusion, I would have relied on the results from the CFI ($CFI < 0.90$), the RMSEA ($RMSEA < 0.08$), and the SRMR ($SRMR < 0.05$). This expectation would have been based on the CFA run in the original study that developed the measure (Kowalski & Crocker, 2001). During the pre-test of the CFQ (Kowalski & Crocker, 2001), I would expect the majority of means for item responses to be high amongst the problem-focused and emotion-focused coping domains. To support this notion, Gould, Eklund and Jackson (1993) found that Olympic wrestlers used multiple coping strategies such as visualization and routine planning, which can be categorized as both problem and emotion-focused coping. Due to the timing of this assessment (expected low stress period for academics and athletics), athletes would be more likely to confront stressful situations because stress has not yet manifested into an ongoing problem, which is when maladaptive coping styles become more common (Seymour, Wood, Giallo, & Jellett, 2013). Athletes use problem-focused coping when the situation is perceived as controllable, and use emotion-focused when the situation is not (Nicholls & Polman, 2007). When these styles begin to fail, maladaptive coping becomes a common style (Seymour et al., 2013). In a study conducted by Heppner, Witty, and Dixon (2004), the authors found ineffective coping and depression to be positively correlated. Similarly,

these results were supported by other researchers who found that maladaptive coping was a strong predictor of depression (Renaud, Dobson, & Drapeau, 2014).

Given the anticipated findings on the pre-test, I would expect the post-test to yield significantly different results. At this point, I would expect stress and maladaptive coping to have a positive correlation; meaning that as stress increases so does maladaptive coping mechanisms. This belief follows the transactional model of coping (Nicholls & Polman, 2007), which states that an individual will cope a certain way in different situations and is influenced by internal and external demands. As Gould and colleagues (1993) found, some athletes will use a combination of coping styles when trying to address a stressful situation. Given the expected results of high levels of stress, I would expect the avoidance-focused coping to be significantly high, specifically due to responses on items such as *I tried to get away from the situation to reduce stress*. This result is supported by the Compass of Shame (Ellison & Partridge, 2012; Nathanson, 1992), which outlines the types of maladaptive coping styles used when failing to effectively deal with a stressor. Furthermore, as stress is ongoing, coping can become ineffective, making athletes more susceptible to mental health issues (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010; Seymour et al., 2013; Wilson et al., 2004).

Depression

During the pre-test administration of the BDI-II (Beck et al., 1996), I would have expected the mean levels of depression for the majority of participants to be within the minimal category for depression, which is a range of 0-13 (Beck et al., 1996). There are two fundamental reasons for this initial expectation. First, athletes tend to under report mental health issues because of the negative stigma that is attached to this issue (Weigand

et al., 2013). Second, the BDI-II is designed to assess symptoms of depression in both clinical and non-clinical populations. Therefore, individuals could experience varying levels of depressive symptoms due to other external stressors such as finances or injury. Outliers would have been removed because depressive symptoms could still be present despite low responses to stress and maladaptive coping. This situation may represent depression that is caused by some other issue such as childhood trauma (Suzuki, Poon, Papadopoulos, Kumari, & Cleare, 2014). To be clear, this project was specifically interested in academic, athletic, and social situations.

Given the anticipated results for depressive symptoms on the pre-test, I would have expected significantly different results during the post-test. Lu et al. (2012) found that athletes who have chronic stress are more likely to lack emotional stability. The dual-role stress that athletes face leaves them susceptible to depression (Proctor & Boan-Lenzo, 2010). I would have expected between 15-20% of participants to have depressive symptoms above minimal depression on the BDI-II, as these numbers have been found in relatively similar studies (Nixdorf et al., 2013; Weigand et al., 2013).

Stress and Depression

As outlined in the previous areas of discussion, all findings in this section are hypothetical and are based on previous research in an effort to support what I believe would have been discovered had this study been conducted. The primary purpose of this research project was to determine whether stress influences depressive symptoms in collegiate athletes. To try and answer this question, a comparison using a multiple regression analysis of the CSASI and BDI-II (Beck et al., 1996) would have been completed.

During the pre-test and post-test, I would expect the multiple regression analysis to show high correlations between two of the independent variables (sport and academic stress) and the dependent variable (depression). An example supporting this anticipated expectation could be drawn from the study done by Berger and colleagues (1997), who found that athletes who underwent more intense training were more likely to experience bouts of depression. Alternatively, there seems to be discrepancies about whether or not depression is a dependent variable on its own, or whether it contains two underlying dependent variables (Ward, 2006). As such, I would have conducted another multiple regression to account for this discrepancy and to try and determine the effect of the independent variables on each of the dependent variables (i.e., cognitive and somatic). I would expect results that would support a higher relationship between the independent variables and the cognitive domain. To support this notion, Smolderen et al. (2009) found that amongst patients with acute myocardial infarction, cognitive symptoms were recognized as belonging to depression, whereas somatic symptoms belonged to outcomes. This suggests that cognitive symptoms are easier to recognize and associate with depression. Furthermore, I would expect the largest effect on the dependent variable to be from sport and academic stress. This result will likely support the stress-contributing nature of sport (Leith, 1998; Proctor & Boan-Lenzo, 2010).

Given the anticipated results from two of the independent variables, I would expect results on the social stress domain to only be moderately correlated. There are two specific reasons for this. First, Ogden and Mtandabari (1997) found that social support could actually reduce the chances of experiencing depression. Furthermore, Evans and colleagues (2012) found that for individual sports such as swimming, athletes spend a

significant amount of time with teammates, which would contribute to the development of a strong social support network between teammates. However, research has found that athletes reported not having enough opportunity to develop or experience social interactions due to their multiple commitments (Potuto & O' Hanlon, 2007; Proctor & Boan-Lenzo, 2010). This expected result will determine the amount of variance accounted for by the independent variables, showing that stress is an effective predictor of depression.

Stress, Coping, and Depression

The second purpose of this research project was to determine what effect coping mechanisms have on the presence of depressive symptoms in collegiate swimmers. In order to address this research question, I would have conducted multiple regression analyses to determine the relationship between coping and depression. During the pre-test and the post-test, I would have expected problem-focused and emotion-focused coping to have a low to moderate negative relationship with depressive symptoms. Renaud et al. (2014) found that “engagement in self-reliance and not engaging in escape coping predicted greater decreases in levels of depression” (p. 42). However, I would expect avoidance-focused coping to be highly correlated with depressive symptoms. Lane, Terry, Stevens, Barney, and Dinsdale (2004) found that when mood disturbances occur in athletes, intervention should be considered because it is the first sign of a maladaptive response.

In order to determine if both stress and coping have an effect on depression, I would have used path analysis. I would expect results on the path analysis to show that stress had a positive relationship with depression (i.e., as stress increases, so does

depression). This notion is supported by Hammen (2005) who found that stress and depression have a positive relationship due to the fact that stress produced negative or undesirable content that matched a particular personality style, triggering a specific series of reactions. I would also expect the results to show that coping has a strong relationship with depression. However, I would expect coping to play a mediating role, thus increasing the effect on the dependant variable (i.e., depressive symptoms or depression). The results from the path analysis would have shown how much variance was accounted for by each of the independent variables when relating to the dependant variables (McGrath, 2011).

Mood Journal

Given the fact that the mood journals were not distributed, all expected findings are based on, and supported by, previous research. During the first administration of the mood journal, I would expect a common theme to emerge that shows the majority of participants to have minimal levels of stress, maladaptive coping, and depressive symptoms. I would also expect the majority of responses to show that the participants are dedicating average amounts of time to both training (11-15 hours per week and swimming 4000m to 6000m per workout) and academics (31-40 hours per week). Furthermore, I anticipate that a small number of participants would answer question five (focusing on how stressed the participant was in the last 2 weeks) with a response of *strongly* or *severely stressed*. Hendrix, Acevedo, and Hebert (2000) found that when an increased workload is too demanding it can lead to burnout, which increases perceived stress. This time point coincides with the beginning of the school and swim season, where stress and training are believed to be minimal. In the event that some responses equate to

strong levels of stress, I would expect the sources of stress to be focused on issues such as course selection and scheduling the semester to accommodate the large commitment to both sport and academics (Lu et al., 2012).

In response to stress questions, I would expect at this point, participants would be experiencing greater autonomy over their perceived stress and would likely use problem-focused or emotion-focused coping to approach their situation with success (Nicholls & Polman, 2007). In response to these styles of coping mechanisms, I would expect perceived coping to be reported as somewhat to very successful from a significant number of the participants. On the remaining questions addressing mood, I would expect the majority of participants to respond with positive responses such as *good* or *excellent*. Coupled with these positive responses, I would have expected mood over the past two weeks to remain constant, as opposed to better or worse. I believe a common theme for participants would have been to either label their symptoms as normal within the cognitive domain as suggested by Smolderen et al. (2009), or to skip this question due to a lack of identifying symptoms.

The mood journal portion of the study was expected to involve several administration periods. As such, I would have expected several themes to emerge over the period of subsequent administrations. Specifically, training volume would have drastically increased over time, and participants would have faced high demands from their sport. For example, I would expect the majority of participants to increase their training volume into the 4000-8000+ category. Furthermore, I would expect these athletes to be dedicating 16-20+ hours per week. This increase in training is supported by Tobar (2012), who found that coaches include an over-training component to their

programs. Negative training stress has been linked to negative psychological reactions amongst athletes (Silva, 1990). Proctor and Boan-Lenzo (2010) found that athletes are exposed to unique sources of stress from the high demands placed on them by participation in athletics. This heightened training volume is expected to contribute to stress, maladaptive coping, and depressive symptoms because it manifests itself as a chronic stressor based on the distress-contributing nature of athletics (Ayers et al., 2012). I would also expect the amount of time dedicated to academics to vastly increase as students reach final exams. For example, I would expect a large number of participants to be devoting over 41 hours per week. As stated in the research, academic demands are a significant source of stress for college athletes (Dilley-Knoles et al., 2010; Humphrey et al., 2000; Potuto & O' Hanlon, 2007). Due to these increases, I would expect a large number of participants to report significantly high levels of perceived stress during exam periods.

Due to the likely increase in perceived stress, I would expect the majority of participants to respond with their perceived stress level as *strongly* or *severely* at this point in time. Furthermore, I would expect responses about the source of stress to focus on both academic and sport stress (e.g., exams, training, and scheduling conflicts). These dual roles have been found to significantly contribute to stress in collegiate athletes (Ayers et al., 2012; Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010). As the demands from sport and academics increase, I would expect participants to report a struggle with balancing their commitments. During subsequent administrations, I would expect an increase in perceived social stress responses from participants. With the amount of perceived stress varying, coping mechanisms are likely to be affected.

During the first administration of the mood journal I would expect a significant number of participants to report coping styles that fall within problem-focused and emotion-focused coping domains such as goal-setting or relaxation. Furthermore, I expect these participants to report being *somewhat successful* or *very successful*. However, given any changes in stress, on subsequent administrations, I would expect an increase in the number of participants who report maladaptive coping mechanisms such as trying to avoid the situation. These participants will likely report being *somewhat unsuccessful* or *very unsuccessful* in reducing their stress. I believe the results from the mood journals would have shown that athlete coping follows the transactional model (Nicholls et al., 2007). As athletes fail to cope with increases in stress, coping becomes chronic, and avoidance coping (e.g., numbing the situation) becomes more prevalent amongst participants. A common coping mechanism I would expect from the mood journal is the frequent use of alcohol consumption as a way of coping with stress, as this mechanism is a frequent maladaptive coping choice (Wilson et al., 2004).

When an athlete's mood begins to change, it is likely because they are using a maladaptive style of coping in response to a particular stressor (Lane et al., 2004). I would expect that athletes who present maladaptive coping styles to respond with poorer levels of mood in each subsequent journal. More specifically, I would expect participants to report their mood as being worse than the previous two weeks. I believe the results would have shown that collegiate athletes suffered from the distress-contributing nature of exercise (Storch et al., 2005). I also expect results from the mood section of the mood journal would have also shown that athletes did not get the benefits of exercise because of the high frequency and duration of workouts within their sport (Berger et al., 1997;

Leith, 1998). More specifically, I would expect athletes to respond to the final question of the mood journal with descriptions that are more cognitive, such as sadness, agitation, irritability, and a lack of energy, which are symptoms that consist of 15 of the 21 items on the BDI-II (Beck et al., 1996). The research supports this expectation, as individuals are more likely to recognize their cognitive symptoms (Smolderen et al., 2009).

Overall, I would expect the mood journals to have provided common themes about how increases in stress can alter coping mechanisms and facilitate a possible increase in depressive symptoms in collegiate athletes. The changes reported from early administrations to later ones would be significant enough to show how managing stress in a dual role environment is critical for mental health maintenance.

Chapter 5: Conclusion

Given that the results from this project are purely hypothetical, the following section aims to outline specific contributions and future directions for research based on this study had it actually been conducted.

Limitations

The instruments used for quantitative measures would have been distributed during the first week of classes (pre-test) and first week of exams (post-test). The qualitative mood journal would have been given out in two-week intervals every month. For the mood journal, a major limitation was timing. Due to the fact that stress can happen at any time, the administration of the mood journal may or may not have coincided with a significantly stressful situation. Participants selected for the mood journal may have had a hard time accurately describing their responses to the open-ended questions because of lapsed time since the event.

Another limitation of the study would have been participant commitment. Due to the fact that eight mood journals entries were required from participants, dropout from the study could have been problematic. Furthermore, all responses to both quantitative and qualitative measures were given independently. Some items could have been difficult for participants for a number of reasons. First, items could have been confusing and as these journals were completed on their own time, there would have been no help offered from the researcher. Second, due to the nature of the study, some item responses could have caused emotional discomfort for the participant. Finally, due to the stigma of mental health in athletics, there is a tendency for athletes to underreport their true responses (Weigand et al., 2013). However, online distribution was the most practical way to attract participants because of the location of various universities in western Canada, and a limited number of swimmers on each team.

The participants in the study were limited to collegiate swimmers in western Canada who participated in the CWUAA. The exclusion of other swimming populations (e.g., non-collegiate elite athletes) does not mean their demographic is not important. However, due to the unique pressures faced by college athletes, inclusion of other demographics would not be relevant to the target variables. The sample used for this research may not have allowed for the generalization of our results to collegiate athletes in other individual sports. Finally, the study would have excluded team sports because we were specifically interested in the individual sport of swimming.

Future Research

Research Approach. Despite the potential limitations of this hypothetical project, there are several research-focused implications that would have come from the

findings. The quantitative study represents an introductory exploration involving the assessment of stress, coping, and depression in collegiate level swimmers. The project would have also provided an in-depth analysis pertaining to the sources of stress, coping styles, and levels of depression in collegiate swimmers via the qualitative mood journals.

Future research should focus on determining the effects of stress and coping on depression in all levels of swimming (e.g., elite and adolescent). Future quantitative research could be used to identify the prevalence of sources of stress and coping styles for other levels of swimmers. Further insight is also required to determine alternative strategies for swimmers to manage stress and develop effective coping strategies. One such example would be through the development of a social support network.

Future research should also address any gender differences that may be present in terms of the impact of stress and coping on depression. For example: would the likelihood of developing depressive symptoms differ between male and female swimmers based on their experiences of stress and use of coping strategies? Interestingly, Matud (2004) found that women were more susceptible to stress than men and used more emotion-focused coping strategies when trying to alleviate the stress. At the present time, interventions for stress and coping are the same for males and females, and as such, the identification of gender differences could facilitate the development of effective gender specific intervention strategies.

This study could help establish the role of sport and non-sport stressors in the development of depressive symptoms in collegiate swimmers. As identified in the literature, stress can take on different forms and will affect each athlete differently (Proctor & Boan-Lenzo, 2010). The results of the study could have provided a rationale

for this methodological framework, which allows a comparison of both stress and coping's effects on depressive symptoms while using coping as a mediating variable. This method would have allowed the partialing of the independent variables in order to reveal any mediating effects between the variables.

As discussed in the limitations section, researchers can expand on the population base from this study (predominantly western Canada) to include more universities across Canada. This would allow researchers to make predictions based on larger numbers, which is important in terms of having confidence in the results (i.e., increased power). This study could also be expanded to address team sports. As discussed by Nicholls and colleagues (2009), athletes experience different stressors when training as opposed to competing. A future study, could look at stress, coping, and depression in sports where competing is more prevalent. This study could also be expanded to compare the different types of individual sport, as there appears to be a typology of sport type ranging from very independent to more interdependent (Evans et al., 2012).

Although I've listed several future research avenues, researchers could also expand this study to include multiple populations. In a study done by Kimball and Freysinger (2003), results indicated that race is important in shaping the experience of stress in collegiate athletes. As such, it would be interesting to further validate the CSASI with teams of varying group composition. In addition, previous research has established that amongst collegiate athletes, the sources of stress addressed in this particular study tend to be the most prevalent amongst athletes (Humphrey et al., 2000; Proctor & Boan-Lenzo, 2010). Despite the study narrowly focusing on the most common stressors, there is evidence that other stressors could be present amongst collegiate athletes (Lu et al.,

2012; Proctor & Boan-Lenzo, 2010). Therefore, it would be of interest to expand this line of inquiry with regard to other potential sources of stress.

Counselling Approach. Speaking from a counselling perspective, the development of an evidence-based stress management program would be effective for use with athletes. For example, using gender differences in coping styles to educate and use effective gender-based stress management techniques. In terms of stress, Hiebert (1983) developed a stress management program that focused on the physiological, cognitive, emotional, and behavioural symptoms of stress. Stress management programs need to be tailored specifically to swimming because of the specific challenges they face. As Wilson et al. (2004) found that athletes lack specific coping strategies to effectively deal with stress. This finding supports the notion that athletes are ill prepared to deal with stress. The first aspect of the stress management program could be educational in nature, with a specific focus on teaching athletes and coaches about stress and how it influences their reactions to certain situations. This educational component would be a first-step in working towards reducing the negative stigma mental health has in the athletic realm. For athletes, education could help them understand the importance of responding effectively to stress. This part of the program could help teach proper coping mechanisms and their significant role in mental health. As discussed by Armstrong and Oomen-Early (2009), athletes tend to resort to problem behaviours to cope. This educational component would be valuable to athletes because it would promote awareness of what defines stress, what a stressful situation entails, and how to effectively react to that situation. For coaches, the educational component could teach them how to be more aware of an athlete in distress. To support this notion it has been suggested that maladaptive coping occurs in response

to stress and “practitioners should consider intervening when such symptoms first appear” (Lane et al., 2004, p. 886). This would be a first-step in helping coaches recognize and address this issue.

The second aspect of the stress management program is more practical in nature. This part of the program could be facilitated by a psychologist (or sport psychologist) who could provide workshops for the athletes to practice activities such as helpful coping strategies for stress. For example, solution-focused brief therapy focuses on how individuals are currently functioning with a disorder such as depression (Ratner, George, & Iveson, 2012). Furthermore, Cognitive Behavioural Therapy (CBT) has been found to be an effective tool for treating athletes with depression (Baron, Baron, & Foley, 2009). This style of therapy helps clients become aware of the coping strategies, which have and have not been working for them. This perspective would be useful in helping athletes become aware of coping effectiveness that could help reduce distress.

Overall, from both research and practical perspectives, the information gleaned from this study (if it had been conducted) could have promoted the idea that mental health influences changes in athletic performance. Given the expected results, there would have been evidence that would have shown disorders such as depression to be serious for collegiate athletes, and this may have highlighted the need for addressing such issues.

Summary

This mixed-methods study was designed to assess the influence of stress and coping strategies on the presence of depressive symptoms in collegiate swimmers. The quantitative measures were developed to assess sources of stress (academic, sport, and

social), coping styles (problem, emotion, and avoidance-focused), and depressive symptoms (cognitive and somatic). The qualitative mood journals were developed to allow open-ended responses for stress, coping, and mood. The data that would have been collected from the mood journals would have reflected the perceptions of participants at given time points throughout the year. The results would have supported the notion that maladaptive coping styles would result from ineffective coping, and would subsequently leave athletes susceptible to depression. I expect the results would have also shown that as athletes endured more stress, their coping styles would have changed from problem and emotion-focused to maladaptive-focused.

Due to the specific challenges faced by collegiate swimmers, it is important for psychologists (or sports psychologists) to understand that many variables could be responsible for stress responses in athletes. As such, we must identify which sources are relevant to the athlete, and direct our interventions to those specific needs. Athletes have been told that only the strongest will survive, and by extension, they are underreporting the issues. This is a significant challenge for research, and this negative stigma pertaining to mental health must be removed. In understanding this stigma, a strength of this study would have been its anonymity—athletes could have openly expressed their feelings with the knowledge that it was completely anonymous. This would have given athletes the comfort and security they needed to honestly answer questions about such a sensitive subject.

References

- Allen, M. S., Greenless, I., & Jones, M. (2011). An investigation of the five-factor model of personality and coping behavior in sport. *Journal of Sport Sciences, 29*, 841-850. doi: 10.1080/02640414.2011.565064
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Armstrong, S., & Oomen-Early, J. (2009). Social connectedness, self-esteem, and depression symptomatology among collegiate athletes versus non-athletes. *Journal of American College Health, 57*, 521-526.
- Arnau, R. C., Meagher, M.W., Norris, M. P., & Bramson, R. (2001). Psychometric evaluation for the Beck Depression Inventory-II with primary care medical patients. *Health Psychology, 20*, 112-119. doi: 10.1037//0278-6133.20.2.112
- Ayers, K., Pazmino-Cevallos, M., & Dobose, C. (2012). The 20-hour rule: Student athletes time commitment to athletics and academics. *Virginia Journal, 33(1)*, 22-26.
- Bäckmand, H., Kaprio, J., Kujala, U., & Sarna, S. (2003). Influence of physical activity on depression and anxiety of former elite athletes. *International Journal of Sports Medicine, 24*, 609-619. doi: 10.1055/s-2003-43271
- Baron, D. A., Baron, S. H., & Foley, T. (2009). Cognitive and behavioral therapy in depressed athletes. In G. Christodoulou, M. Jorge, & J. Mezzich (Eds.), *Advances In Psychiatry* (Vol.3, pp. 61-75). Athens, Greece: Beta Medical Publishers.
- Beck A. T, Steer R. A, & Brown G. K. (1996). *Beck Depression Inventory manual* (2nd

- ed.). San Antonio, TX: The Psychological Corporation.
- Berger, B. G., Grove, R. J., Prapavessis, H., & Butki, B. D. (1997). Relationship of swimming distance, expectancy, and performance to mood states of competitive athletes. *Perceptual and Motor Skills, 84*, 1199-1210. doi: 10.2466/pms.1997.84.3c.1199
- Berger, B. G., Owen, D. R., & Man, F. (1993). A brief review of literature and examination of acute mood benefits of exercise in Czechoslovakian and United States swimmers. *International Journal of Sport Psychology, 24*(2), 130-150.
- Carver, C. S., Scheier, M. F., & Kumari, W. J. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283. doi: 10.1037/0022-3514.56.2.267
- Crocker, P. R. (1992). Managing stress by competitive athletes: Ways of coping. *International Journal of Sport Psychology, 23*, 161-175.
- Crocker, P. R., & Graham, T.R. (1995). Coping by competitive athletes with performance stress: Gender differences and relationships with affect. *Sport Psychologist, 9*, 325-338.
- Crocker, P. R., Kowalski, K. C., & Graham, T. R. (1998). Measurement of coping strategies in sport. In J. Duda (Ed.), *Advances in sport and exercise measurement* (pp. 149-161). Morgantown, WV: Fitness Information Technology.
- Deroma, V. M., Leach, J. B., & Leverett, P. J. (2009). The relationship between depression and college academic performance. *College Student Journal, 43*, 325-334.
- Devonport, T. J., Lane, A. M., & Biscomb, K. (2013). Exploring coping strategies used

- by national adolescent netball players across domains. *Journal of Clinical Sport Psychology*, 7, 161-177.
- Dilley-Knoles, J., Burnett, J. S., & Peak, K. W. (2010). Making the grade: Academic success in today's athlete. *Sport Journal*, 13(1), 6.
- Ellison, J., & Partridge, J. A. (2012). Relationships between shame-coping, fear of failure, and perfectionism in college athletes. *Journal of Sport Behavior*, 35, 19-39.
- Evans, B. M., Eys, M. A., & Bruner, M. W. (2012). Seeing the "we" in "me" sports: The need to consider individual sport team environments. *Canadian Psychology*, 53, 301-308. doi: 10.1037/a0030202
- Folkman, S. (1991). Coping across the life span: Theoretical issues. In E. Cummings, A. Greene, & K. Karraker (Eds.). *Life-span developmental psychology: Perspectives on stress and coping* (pp. 3-19). New York, NY: Psychology Press.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). New York, NY: Pearson.
- Gardiner, A. (2006). Surfacing from depression. *USA Today*. Retrieved from http://usatoday30.usatoday.com/news/health/2006-02-05-womens-health-depression_x.htm
- Gould, D., Eklund, R. C., & Jackson, S. A. (1993). Coping strategies used by U.S. olympic wrestlers. *Research Quarterly for Exercise and Sport*, 64, 83-93. doi: 10.1080/02701367.1993.10608782
- Hammen, C. (2005). Stress and depression. *Annual Review of Clinical Psychology*, 1, 293-319. doi: 10.1146/annurev.clinpsy.1.102803.143938

- Hammermeister, J., & Burton, D. (2004). Stress, appraisal, and coping revisited: Examining the antecedents of competitive state anxiety with endurance athletes. *Sport Psychologist, 15*, 66-90.
- Hammond, T., Gialloredo, C., Kubas, H., & Davis, H. (2013). The prevalence of failure based depression among elite athletes. *Clinical Journal of Sport Medicine, 23*, 273-277. doi: 10.1097/JSM.0b013e318287b870
- Hanton, S., Neil, R., Mellalieu, S. D., & Fletcher, D. (2008). Competitive experience and performance status: An investigation into multidimensional anxiety and coping. *European Journal of Sport Medicine, 8*(3), 143-152. doi: 10.1080/17461390801987984
- Hendrix, A. E., Acevedo, E. O., & Hebert, E. (2000). An examination of stress and burnout in certified athletic trainers at division I-A universities. *Journal of Athletic Training, 35*, 139-144.
- Heppner, P. P., Witty, T. E., & Dixon, W. A. (2004). Problem-solving appraisal and human adjustment: A review of 20 years of research using the problem solving inventory. *Counseling Psychologist, 32*, 344-428. doi: 10.1177/0011000003262793
- Hiebert, B. (1983). A framework for planning stress control interventions. *Canadian Counsellor, 17*, 51-61.
- Hiebert, B. (2002). Relaxation in the classroom: A win-win life skill. *Guidance and Counseling, 17*(3), 73-81.
- Hill, A. P., Hall, H. K., & Appleton, P. R. (2010). Perfectionism and athlete burnout in junior elite athletes: The mediating role of coping tendencies. *Anxiety, Stress and*

Coping, 23, 415-430. doi: 10.1080/10615800903330966

Humphrey, J. H., Yow, D. A., & Bowden, W. W. (2000). *Stress in college athletics:*

Causes, consequences, coping. Binghamton, NY: Haworth Half-Court Press, Inc.

Josefsson, T., Lindwall, M., & Archer, T. (2014). Physical exercise intervention in depressive disorders: Meta-analysis and systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 24, 259-272. doi: 10.1111/sms.12050

Kimball, A., & Freysinger, V. J. (2003). Leisure, stress, and coping: The sport participation of collegiate student-athletes. *Leisure Sciences*, 25, 115-141. doi: 10.1080/01490400306569

Kowalski, K. C., & Crocker, P. R. (2001). Development and validation of the coping function questionnaire for adolescents in sports. *Journal of Sport & Exercise Psychology*, 23, 136-155.

Lance, L. M. (2004). Gender differences in perceived role conflict among university student athletes. *College Student Journal*, 38, 179-190.

Lane, A. M., Terry, P. C., Stevens, M. J., Barney, S., & Dinsdale, S. L. (2004). Mood responses to athletic performance in extreme environments. *Journal Of Sports Sciences*, 22, 886-897. doi: 10.1080/02640410400005875

Lazarus, R. S. (1974). Cognitive and coping processes in emotion. In B. Weiner (Ed.). *Cognitive views of human motivation* (pp. 21-32). New York, NY: Academic.

Lazarus, R. S. (1999). *Stress and emotion: A new synthesis*. New York, NY: Springer.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York, NY: Springer.

Leicester, J. (2014). 1 in 4 soccer players suffer symptoms of anxiety, depression.

Associated Press. Retrieved from <http://www.ctvnews.ca/sports/1-in-4-pro-soccer-players-suffer-symptoms-of-anxiety-depression-1.1757067>.

Leith, L. (1998). *Exercising your way to better health*. Morgantown, WV: Fitness Information Technology, Inc.

Levy, A. R., Nicholls, R. C., & Polman, C. J. (2011). Pre-competitive confidence, coping, and subjective performance in sport. *Scandinavian Journal of Medicine & Science in Sports, 21*, 721-729. doi: 10.1111/j.1600-0838.2009.01075.x

Lleras, C. (2005). Path analysis. *Encyclopedia of Social Measurement, 3*, 25–30.

Lu, F. J., Hsu, Y., Chan, Y., Cheen, J., & Kao, K. (2012). Assessing college student athletes' life stress: Initial measurement development and validation. *Measurement in Physical Education and Exercise Science, 16*, 254-267. doi: 10.1080/1091367X.2012.693371

Martin, W. E., & Bridgmon, K. D. (2012). *Quantitative and statistical research methods: From hypothesis to results*. San Francisco, CA: John Wiley & Sons.

Matud, M. P. (2004). Gender differences in stress and coping styles. *Personality and Individual Differences, 37*, 1401-1415. doi: 10.1016/j.paid.2004.01.010

McGrath, R. E. (2011). *Quantitative models in psychology*. Washington, DC: American Psychological Association.

Miller-Tait Spriddle, J. W. (2004). *Sources of stress, stress reactions and coping strategies used by elite female golfers*. (Unpublished master's thesis). University of Lethbridge, Lethbridge, Alberta.

Mounsey, R., Vandehey, M. A., & Diekhoff, G. M. (2013). Working and non-working university students: Anxiety, depression, and grade point average. *College Student*

Journal, 47, 379-389.

- Nathanson, D. L. (1992). *Shame and Pride*. New York, NY: Norton.
- Nicholls, A. R., & Polman, R. C. (2007). Coping in sport: A systematic review. *Journal of Sports Sciences*, 25, 11-31. doi: 10.1080/02640410600630654
- Nicholls, A. R., Jones, C. R., Borkoles, E., & Polman, C. J. (2009). Acute sport-related stressors, coping, and emotion among professional rugby union players during training and matches. *Scandinavian Journal of Medicine & Science in Sports*, 19, 113-120. doi: 10.1111/j.1600-0838.2008.00772.x
- Nicholls, A. R., Polman, R., Levy, A. R., Taylor, J., & Cobley, S. (2007). Stressors, coping, and coping effectiveness: Gender, type of sport, and skill differences. *Journal of Sports Sciences*, 25, 1521-1530. doi: 10.1080/02640410701230479
- Nixdorf, I., Frank, R., Hautzinger, M., & Beckmann, J. (2013). Prevalence of depressive symptoms and correlating variables among German elite athletes. *Journal of Clinical Sport Psychology*, 7, 313-326.
- Ntoumanis, N., & Biddle, S. J. (1998). The relationship of coping and its perceived effectiveness to positive and negative affect in sport. *Personality and Individual Differences*, 24, 773-778. doi: 10.1016/S0191-8869(97)00240-7
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw Hill.
- Ogden, J., & Mtandabari, T. (1997). Examination stress and changes in mood and health related behaviours. *Psychology and Health*, 12, 289-299. doi: 10.1080/08870449708407406
- Ottenbreit, N. D., & Dobson, K. S. (2004). Avoidance and depression: The construction

- of the cognitive-behavioral avoidance scale. *Behaviour Research and Therapy*, 42, 293-313. doi: 10.1016/S0005-7967(03)00140-2
- Parkes, K. R. (1986). Coping in stressful episodes: The role of individual differences, environmental factors, and situational characteristics. *Journal of Personality and Social Psychology*, 51, 1277-1292.
- Potuto, J. R., & O'Hanlon, J. (2007). National study of student-athletes regarding their experiences as college students. *College Student Journal*, 41, 947-966.
- Pritchard, M. E., Wilson, G. S., & Yamnitz, B. (2007). What predicts adjustment among college students?: A longitudinal panel study. *Journal of American College Health*, 56, 15-21. doi: 10.3200/JACH.56.1.15-22
- Proctor, S. L., & Boan-Lenzo, C. (2010). Prevalence of depressive symptoms in male intercollegiate student-athletes and nonathletes. *Journal of Clinical Sport Psychology*, 4, 204-220.
- Ratner, H., George, E., & Iveson, C. (2012). *Solution focused brief therapy: 100 key points & techniques*. New York, NY: Routledge.
- Reja, U., Manfreda, K. L., Hlebec, V., & Vehovar, V. (2003). Open-ended vs. close ended questions in web questionnaires. *Advances in Methodology and Statistics (Metodološki Zvezki)*, 19, 159-177.
- Renaud, J., Dobson, K. S., & Drapeau, M. (2014). Cognitive therapy for depression: Coping style matters. *Counselling and Psychotherapy Research*, 14, 42-47. doi: 10.1080/14733145.2012.758754
- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist*, 41, 813-819. doi: 10.1037/0003-066X.41.7.813
- Seymour, M., Wood, C., Giallo, R., & Jellett, R. (2013). Fatigue, stress and coping in

- mothers of children with an autism spectrum disorder. *Journal Of Autism & Developmental Disorders*, 43, 1547-1554. doi: 10.1007/s10803-012-1701-y
- Silva, J. M. (1990). An analysis of the training stress syndrome in competitive athletes. *Journal of Applied Sport Psychology*, 2, 5-20. doi: 10.1080/10413209008406417
- Sloan-Power, E. M., Boxer, P., McGuirl, C., & Church, R. (2012). Coping zone construction and mapping: An exploratory study of contextual coping, PTSD, and childhood violence exposure in urban areas. *Journal of Interpersonal Violence*, 28, 1741- 1764. doi:http://0-dx.doi.org.darius.uleth.ca/10.1177/0886260512469101
- Smolderen, K. G., Spertus, J. A., Reid, K. J., Buchanan, D. M., Krumholz, H. M., Denollet, J., . . . Chan, P. S. (2009). The association of cognitive and somatic depressive symptoms with depression recognition and outcomes after myocardial infarction. *Cardiovascular Quality and Outcomes*, 2, 328-337. doi: 10.1161/CIRCOUTCOMES.109.868588
- Storch, E. A., Roberti, J. W., & Roth, D. A. (2004). Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory-second edition in a sample of college students. *Depression and Anxiety*, 19, 187-189. doi: 10.1002/da.20002
- Storch, E. A., Storch, J. B., Killiany, E. M., & Roberti, J. W. (2005). Self-reported psychopathology in athletes: A comparison of intercollegiate student-athletes and non-athletes. *Journal of Sport Behavior*, 28, 86-97.
- Suzuki, A., Poon, L., Papadopoulos, A. S., Kumari, V., & Cleare, A. J. (2014). Long term effects of childhood trauma on cortisol stress reactivity in adulthood and

relationship to the occurrence of depression. *Psychoneuroendocrinology*, *50*, 289-299. doi:10.1016/j.psyneuen.2014.09.007

Taliaferro, L. A., Rienzo, B. A., Pigg, M. R., Jr., Miller, D. M., & Dodd, V. J. (2008).

Associations between physical activity and reduced rates of hopelessness, depression, and suicidal behavior among college students. *Journal of American College Health*, *57*, 427-435. doi: 10.3200/JACH.57.4.427-436

Tamminen, K. A., & Holt, N. L. (2010). A meta-study of qualitative research examining

stressor appraisals and coping among adolescents in sport. *Journal of Sports Sciences*, *28*, 1563-1580. doi: 10.1080/02640414.2010.512642

Thiese, M. S. (2014). Observational and interventional study designs; an overview.

Biochemia Medica., *24*, 199-210. doi: 10.11613/BM.2014.022

Tobar, D.A. (2012). Trait anxiety and mood state responses to overtraining in men and

women college swimmers. *International Journal of Sport and Exercise Psychology*, *10*, 135-148. doi: 10.1080/1612197X.2012.666399

Vitaliano, P., Russo, J., Carr, J., Maiuro, R. D., & Becker, J. (1985). The ways of coping

checklist: Revision and psychometric properties. *Multivariate Behavioral Research*, *20*, 3-26. doi: 10.1207/s15327906mbr2001_1

Vlaeyen, J. W., & Linton, S. J. (2000). Fear-avoidance and its consequences in chronic

musculoskeletal pain: A state of the art. *Pain*, *85*, 317-332. doi: 10.1016/S0304 3959(99)00242-0

Ward, C. L. (2006). Comparison of factor structure models for the Beck Depression

Inventory II. *Psychological Assessment*, *18*, 81-88. doi: 10.1037/1040 3590.18.1.81

- Weigand, S., Cohen, J., & Merenstein, D. (2013). Susceptibility for depression in current and retired student athletes. *Sports Health, 5*, 263-266. doi: 10.1177/1941738113480464
- Wilkinson, S. (2004). Focus group research. In D. Silverman (Ed.). *Qualitative research: Theory, method and practice* (2nd ed.) (pp. 177-199). Thousand Oaks, CA: Sage Publications.
- Wilson, G. S., Pritchard, M. E., & Schaffer, J. (2004). Athletic status and drinking behavior in college students: The influence of gender and coping styles. *Journal of American College Health, 52*, 269-273. doi: 10.3200/JACH.52.6.269-275
- Wingenfeld, K., Mensebach, C., Rullkoetter, N., Schlosser, N., Schaffrath, C., Beblo, T., & Driessen, M. (2009). Relationship between coping with negative life-events and psychopathology: Major depression and borderline personality disorder. *Psychology and Psychotherapy: Theory, Research and Practice, 82*, 421-425. doi: 10.1348/147608309X452416
- Zhou, X., Zhu, H., Zhang, B., & Cai, T. (2013). Perceived social support as moderator of perfectionism, depression, and anxiety in college students. *Social Behavior and Personality: An International Journal, 41*, 1141-1152. doi: 10.2224/sbp.2013.41.7.1141

Appendix A

Demographic Form

1. Sex
 - Male
 - Female
2. Age: _____
3. University: _____
4. Current Year of University: _____
 - Undergraduate
 - Graduate
5. Current Year of Eligibility: _____
6. Number of classes currently enrolled in
 - 3
 - 4
 - 5
 - 6
7. Number of Labs for the classes currently enrolled in
 - 0
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6
8. How many hours do you dedicate to classes (including study time) per week
 - 1-10
 - 11-20
 - 21-30
 - 31-40
 - 41-50
 - 51-60
 - 61-70
 - 71+
9. How many workouts are required in your sport per week
 - 0-2
 - 3-5
 - 6-8
 - 9-11
 - 12+

10. How many meters do you train per day

- 0-2000
- 2000-4000
- 4000-6000
- 6000-8000
- 8000+

11. How many hours do you dedicate to your sport per week

- 1-5
- 6-10
- 11-15
- 16-20
- 21+

Appendix B

College Student Athlete Stress Inventory (CSASI) *My Own Title*** and the instrument was modified from the reference below.**

*Directions: Below are 15 statements that describe something that annoys/bothers you or makes you uncomfortable in your daily life as a college student-athlete. Please read each one carefully and select the number that indicates how **often** you experience it. Your answers are absolutely confidential.*

Sport Stress

1. I am annoyed with the training program now
2. I worry my training is not beneficial to my performance
3. I am annoyed by my training load because it is too much for me
4. I am worried I cannot train to the best of my ability
5. I feel exhausted when training because of the heavy load

School Stress

6. I am annoyed when preparing for exams
7. I worry about my academic skills because I do not know how to learn efficiently
8. I am worried I have too much school work
9. I am bothered by the lack of time available for academics
10. I feel pressured by the high demands from my courses

Social Stress

11. I am annoyed by my disappointing relationship with my coach
12. I am bothered by poor social skills in handling interpersonal relationships
13. I am bothered by difficult situations with my family
14. I am annoyed with not finding time to encounter romantic partners
15. I am annoyed with being friendless

Likert Scale:

- 1- Never
- 2- Rarely
- 3- Sometimes
- 4- Quite Often
- 5- Very Often
- 6- Always

Modified from: Lu, F. J., Hsu, Y. W., Chan, Y. S., Cheen, J. R., & Kao, K. T. (2012).

Assessing college student athletes' life stress: initial measurement and development validation. *Measurement in Physical Education and Exercise Science*, 16, 254-267.

Appendix C

Coping Function Questionnaire

Directions: Using the questions above as a guide, think about the most stressful situation you have experienced in the past two weeks. This situation can be anything related to sport or academics. It could be during competition, or it can be any issue surrounding your sport. This scale contains 18 questions that describe an approach used to handle a stressful situation. For each question please answer whether or not you have used this approach to handle the stressful situation. If yes, please proceed to the scale below and select the best option.

CFQ (Kowalski & Crocker, 2001), scaled from 1 (not at all), 2 (a little), 3 (somewhat), 4 (quite a bit) to 5 (Very Much)

1. I tried to find a way to change the situation

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

2. I worked harder to try to change the situation

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

3. I used strategies to change the situation in order to deal with the stress

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

4. I did my best to change the situation

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

5. I looked for ways to solve the problem or change the situation

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

6. I stayed in the situation and tried to change it

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)

5 (very much)

7. I stayed in the situation and tried to control my emotions to better deal with the situation

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

8. I tried to change how I thought about the situation so it didn't seem so stressful

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

9. I tried to view the situation in a way that made it seem less stressful

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

10. I tried to use different strategies that would help me control my emotions

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

11. I worked through my emotions in order to feel better

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

12. I tried to find ways to control my emotions

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)
- 5 (very much)

13. I tried to relax so that I could keep my emotions under control

- Yes
- No

- 1 (not at all)
- 2 (a little)
- 3 (somewhat)
- 4 (quite a bit)

5 (very much)

14. I tried to get out of the situation as soon as I could to reduce the stress

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

15. I tried to leave or avoid the situation to get away from the problem or reduce the stress

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

16. I tried to get out of the situation to get away from the stress

- Yes
- No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

17. I tried to get away from the situation to reduce the stress

- Yes

No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

18. In order to reduce the stress I tried to get myself out of the situation

Yes

No

1 (not at all)

2 (a little)

3 (somewhat)

4 (quite a bit)

5 (very much)

Appendix D

Mood Journal

*Directions: Please select your answers based on situations in the past **two** weeks.*

Question 1

How many meters are you training per day?

- 0-2000
- 2100-4000
- 4100-6000
- 6100-8000
- 8100+

Question 2

How many hours do you dedicate to your academics per week?

- 1-10
- 11-20
- 21-30
- 31-40
- 41-50
- 51-60
- 61+

Question 3

How many hours do you dedicate to training per week?

- 0-5
- 6-10
- 11-15
- 16-20
- 21+

Question 4

In the past 2 weeks, have you experienced any stress?

- Yes
- No

Question 5

If yes, in the past 2 weeks, how stressed were you?

- Little
- Moderate
- Strongly
- Severely

Question 6

What was the source of the stress (If more than one, please list all)?

Question 7

What have you done to reduce the experienced stress?

Question 8

How successful were you in reducing the stress?

- Very Successful
- Somewhat Successful
- Neither
- Somewhat Unsuccessful
- Very Unsuccessful

Question 9

In the past 2 weeks, how have you been feeling emotionally?

- Poor
- Fair
- Average
- Good
- Excellent

Question 10

Has your mood:

- Been better in the last 2 weeks
- Been the same as the previous 2 weeks
- Been worse than the last 2 weeks

Question 11

Please explain some of the symptoms or feelings currently present to describe your mood

Appendix E

Dear Coach,

My name is Dwight Holmen and I am a graduate student at the University of Lethbridge. I am currently working at Orion Health in Canmore as a practicum student working towards a Masters Degree in Counselling Psychology. I am also working on my thesis under the supervision of Dr. Luc Martin and Dr. Thelma Gunn, titled "Stress, Coping, and Depression in Collegiate Swimmers." I have enormous respect for swimming and psychology and being able to research them together is exciting for me. I have competed in the CIS for 5 seasons for both the University of Lethbridge Pronghorns and the University of Ottawa Gee-Gees.

Collegiate swimmers are in a unique situation due to pressures from both sport and academics. Being able to understand how stress from these sources can influence the prevalence of depressive symptoms is important not only for performance but for mental health as well. The research project is expected to help identify how stress and coping influence the presence of depressive symptoms.

Upon your permission, the swimmers will be contacted to complete a series of online questionnaires. The questionnaires will be very short (roughly 20 minutes) and can be accessed on any computer and any given time. The swimmers will be invited to complete the questionnaires at two time points (September and December, 2014). There is also a bi-weekly component that allows for a more in-depth analysis of the athletes perception around stress, coping and depression. These will take roughly 10 minutes to complete every 2 weeks for a total of 8. I would like to highlight that not all athletes will be asked to complete these bi-weekly questionnaires, and those that participate will be entered in a draw to win 1 of 3 \$50 pre-paid visa cards. The athletes can choose to consent or abstain from this portion of the research in the consent form.

Participation in the study is completely voluntary and can be withdrawn at any point in time prior to completion, without any negative consequences. Before completing the questionnaires, the athletes will need to fill out a consent form that will be returned to Dwight Holmen. The results of the research project will be coded in such a way that the identities of the athletes will never be exposed and will not be physically attached to the final report of the data.

If there are any questions please contact Dwight Holmen at 587-220-4580 or Dr. Luc Martin at luc.martin@uleth.ca or Thelma Gunn at thelma.gunn@uleth.ca. In addition, should you have any questions or feel that your rights as a participant are not being met, please contact Richard Butt, the Chair of Human Subjects Research in the Office of Graduate Studies and Research in Education within the Faculty of Education. He can be reached by phone (403-329-2425) or email (edu.masters@uleth.ca).

Sincerely,

Dwight Holmen

Appendix F

Dear Athlete,

My name is Dwight Holmen and I am a graduate student at the University of Lethbridge. I am currently working at Orion Health in Canmore as a practicum student working towards a Masters Degree in Counselling Psychology. I am also working on my thesis under the supervision of Dr. Luc Martin and Dr. Thelma Gunn, titled "Stress, Coping, and Depression in Collegiate Swimmers." I have enormous respect for swimming and psychology and being able to research them together is exciting for me. I have competed in the CIS for 5 seasons for both the University of Lethbridge Pronghorns and the University of Ottawa Gee-Gees.

Collegiate swimmers are in a unique situation due to pressures from both sport and academics. Being able to understand how stress from these activities can influence the prevalence of depressive symptoms is important not only for performance but for mental health as well.

You are being formally invited to participate in this research study. The study contains a series of online questionnaires. The questionnaires are short (roughly 20 minutes) and can be accessed on any computer and any given time through secured networks. You will be asked to complete the questionnaires at two time points (September and December, 2014). There is also a bi-weekly component of the thesis that asks you to answer a series of questions every 2 weeks (a total of 8 times). These will take roughly 10 minutes to complete on each occasion, and you can either consent or abstain from this portion when completing the consent form. In addition, should you consent, your name will be entered to in a draw for a chance to win 1 or 3 \$50 pre-paid visa cards at the completion of the study.

Participation in the study is completely voluntary and you can withdraw at any point in time prior to completion with no consequences. Before completing the questionnaires, you will need to fill out a consent form that will be provided on the computer screen. The consent form will be returned to Dwight Holmen. The results of the research project will be coded in such a way that your identity will never be exposed and will not be physically attached to the final report of the data.

If there are any questions please contact Dwight Holmen at 587-220-4580 or Dr. Luc Martin at luc.martin@uleth.ca or Thelma Gunn at thelma.gunn@uleth.ca. In addition, should you have any questions or feel that your rights as a participant are not being met, please contact Richard Butt, the Chair of Human Subjects Research in the Office of Graduate Studies and Research in Education within the Faculty of Education. He can be reached by phone (403-329-2425) or email (edu.masters@uleth.ca).

Sincerely,

Dwight Holmen