EXAMINING THE PERCEPTIONS OF WELLNESS, STRESS, AND SOCIAL SUPPORT AMONG COLLEGIATE STUDENT-ATHLETES AND NON-ATHLETES.

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Kinesiology-Doctor of Philosophy

2015

PUBLIC ABSTRACT

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Purpose: The purpose of the current study was to investigate perceptions of wellness, stress, and social support in male and female collegiate student-athletes and non-athlete students. **Methods:** Student-athlete and non-athlete undergraduates were recruited from a large Division I university in the Midwest United States. A total of 256 student-athletes and 233 non-athlete undergraduate students volunteered to participant in the study. All participants were administered multiple surveys. The independent variable was athlete classification (student-athlete, non-athlete). **Results:** Student-athletes showed lower perceived wellness when compared to non-athletes. There was no significant difference on perceived stress between student-athletes and non-athletes. A higher perception of stress was a significant predictor of lower perceived wellness in both the student-athlete and non-athlete groups, while higher social support satisfaction was a significant predictor of lower stress for student-athletes, but not non-athletes. Higher satisfaction of social support also predicted higher perceived wellness in student-athletes, although not for non-athletes. **Conclusions:** Student-athletes have lower perceptions of wellness when compared to their non-athlete peers and social support seems to be a significant contributor to wellness for student-athletes.

ABSTRACT

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Purpose: Perceived wellness, perceived stress, and social support and their interrelationships were examined in male and female collegiate student-athletes and non-athlete students. **Methods:** Student-athlete and non-athlete undergraduates were recruited from a large Division I university in the Midwest United States. A total of 256 student-athletes and 233 non-athlete undergraduate students volunteered to participant in the study. All participants were administered the PROMIS, PSS-14, and the SSQ6 questionnaires and these measures served as the dependent variables. The independent variable was athlete classification (student-athlete, non-athlete). Multiple statistical analyses (e.g., MANOVA, ANOVA, Regression) were conducted with the *p* value set at .05. **Results:** Student-athletes showed lower perceived wellness when compared to non-athletes ($F_{(8, 479)} = 9.33$, $p = < .001$). There was no significant difference on perceived stress between student-athletes and non-athletes ($F_{(1, 487)} = 1.54$, $p = .215$). Moreover, higher perceived stress was a significant predictor of lower perceived wellness in both the student-athlete and non-athlete groups, while higher social support satisfaction was a significant predictor of lower stress for student-athletes, but not non-athletes. Higher satisfaction of social support also predicted higher perceived wellness in student-athletes, although not for non-athletes. **Conclusions:** Student-athletes have lower perceptions of wellness when compared to their non-athlete peers and social support seems to be a significant contributor to wellness for student-athletes.

I dedicate this dissertation to my Lord and Savior Jesus Christ, from whom this was all possible. I also dedicate this to my neighbor Tony who called me “Professor” long before my time at Michigan State. I finally made it Tony, rest in peace. To my grandfather John who always pushed me to be a better man and showed me the true meaning of respecting life. Finally, I dedicate this dissertation to my parents. You both have stood by me my entire life, pushed me to be anything I wanted to be. You both afforded me opportunities for which I am so thankful. I love you both so very much!

ACKNOWLEDGMENTS

I want to thank Michigan State University for granting me the opportunity to pursue my dreams and forever be a Spartan. I want to extend thanks to the coaches and members of the sports medicine staff for all of their help and participation in this study, particularly Salina and Brian. To, Dawn, thank you always for your advice and help, I never would have made it without you. Thank you to my dissertation committee members Dan, Sally, and Alytia. The guidance you have given me has strengthened my confidence and I am forever grateful. To friends Jeff, Ryan R., and Ryan M., you three have been like my brothers and will forever be grateful for your friendship. To Marvin, your life advice, encouragement, and guidance in my spiritual walk is something I will always remember. To Tracey, it has been a pleasure to work with you and call you my advisor. I will always hold a tremendous amount of respect and admiration for you. Thank you Tracey, for everything you have done for me. Finally, to my Mom and Dad for the life you have helped me lead, the choices you have helped me make, and for always pushing me beyond what was adequate, just enough, or easy. One final note, as always, Go Green!

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

The term wellness is best defined as an individual's "physical, mental, and social well-being not merely in the absence of disease" (World Health Organization, 1948). This definition implies that an individual is said to be well when their physical, psychological and social aspects of life are in balance, not just when physically healthy, but at all times. Therefore, it can be understood by this definition that the physical, psychological, and social branches of one's life are interconnected. When one branch becomes disrupted, it may cause the other two to become disrupted as well, thus decreasing overall wellness. With different theoretical approaches and models to wellness in the literature, one common factor appears, the dimensions of wellness. Wellness encompasses the entire individual. The interconnectedness of mind, body, emotion, belief, and environment of an individual all contribute to their overall quality of life. Two of the most notable models in the literature are the Wheel of Wellness (Sweeney & Witmer, 1991; Witmer & Sweeney, 1992) and the Indivisible-Self Wellness Model (Myers & Sweeney, 2004, 2005). These two models are both theoretically based using Alderian Individual Psychology (Adler 1927, 1954), which expresses the critical factors to a wellness paradigm. Adler considered an individual as a product of his or her own creation, that is, an individual is responsible for his or her own being (Leibin, 1981). While wellness is deemed crucial over the course of an entire lifespan, college is a time where dimensions of wellness can be enhanced as well as challenged (Jones, Harel, & Levinson, 1992).

Overview of the Problem

College students are away from home, many for the first time in their lives. College is no doubt an exciting time of new experiences and independence for young adults. However, this is also a time where these young adults face different challenges and stressful experiences (Jones, Harel, & Levinson, 1992). College students must learn to become their own care provider, being responsible for all of their health and wellness needs. It has been suggested that a large majority of college students do not engage in wellness promoting behaviors (Buckworth & Nigg, 2004), and that college students will often not discuss health concerns with a health professional, or report unusual signs or symptoms to a health professional (Li & Lindsey, 2013). The importance of introducing wellness programs and increasing wellness awareness at the university level to help students maintain greater health and wellness is certainly a worthwhile venture (Fullerton, 2011). McCormick and Lockwood (2006) examined perceptions of undergraduate college students who were enrolled in a university lifetime wellness course, and found that students' perception of knowledge and actual knowledge significantly improved in multiple health and wellness topics after a semester long wellness course.

For the college athlete population in particular, training for their sport may keep them in peak physical condition, however, this does not prevent these athletes from experiencing problems with their physical wellness (i.e., injury). Additionally, while college athletes are likely to encounter similar stressors as college students (i.e., time constraints, concern for future, and financial issues) (Cosh & Tully 2014), they must also cope with issues such as physical injury and intense physical training during due to sport their years in college (Watson & Kissinger, 2007). Watson and Kissinger (2007) found that average wellness scores were higher for the undergraduate non-athlete students when compared to college athletes. Moreover, while college

athletes scored highest within their group on social self, scores were still significantly lower than their non-athlete peers.

With specific respect to injury, research has shown that sport injury can have deleterious effects on multiple aspects of an athlete's wellness. McAllister, Motamedi, Hame, Shapiro, et al. (2001) examined wellness in collegiate athletes at the Division I level, and found that athletes without injury had higher wellness in a number of health domains while injured athletes were significantly lower on all health domains measured (i.e., physical, mental, and social). Similarly, Kuehl, Snyder, Erickson, and Valovich-McLeod (2010) examined the quality of life among a group of collegiate athletes with a history of concussion injuries. Results revealed that athletes with three or more prior concussions scored significantly lower in wellness domains of bodily pain, vitality, and social functioning when compared to athletes with a history of one, two or no concussions.

Moreover, the sport becomes a stressor in many other ways due to performance pressure, consistent evaluation, and the overall physical and psychological investment that athletes give of themselves into their sport (Lazarus, 2000). The National Collegiate Athletic Association (NCAA) has taken a strong stance in recent years, stating their interest in helping college athletes maintain quality of life on all levels (Brown & Blanton, 2002; Etzel, Watson, Visek, & Maniar, 2006). Moreover, Simon and Docherty (2014) reported that quality of life was lower in former Division I college athletes when compared to non-athletes. This is certainly a concern, not just for former collegiate athletes, but college athletes who are currently competing.

Given the findings in the literature, more research is needed to understand wellness perceptions among a larger and broader range of college athletes, thus aiding researchers in

determining potential causes of long-term deleterious effects on health and wellness for college athletes. More research is also needed to make stronger comparisons of perceived wellness between college athletes and non-athlete undergraduate students.

In conjunction with perceived wellness, perceived stress and social support are important constructs that have been significantly related to wellness (Hefner & Eisenberg, 2009; Stilger, Etzel, & Lantz, 2001). It is well known that college is a time where young adults must learn to balance many responsibilities, which may result in high stress levels. Stress can cause many physical and psychological wellness issues such as irritability, emotional instability and tenseness, concentration and memory problems, fatigue, and changes in appetite (Stilger et al., 2001). Cosh and Tully (2014) discussed how college athletes and non-athlete students often have similar stressors, most notably time constraints, concern for future, and financial issues. Variables such as class groups, number of class credit hours enrolled in for the current semester, and number of hours per week devoted to work or sport are certainly related to the stressors mentioned by Cosh and Tully. Additionally scholarship status (i.e., academic/athletic), and injury history need to be examined further given the implications to physical, psychological, and social domains that having a scholarship, or a history of previous injuries may have on current wellness states. Class groups are an important factor considering each year of college can carry with it its own unique stressors. For athletes, freshman year is a time of adjustment to both academic and athletic performance standards, and overall lifestyle. Each year after, returning athletes may receive more athletic responsibilities cast on them by coaches, along with increased importance of academic success as it relates to their future career. While competing in their sport, athletes must take enough academic course units to be considered full time (i.e., 12 units per semester). However, college athletes may often have a high amount of stress about maintaining eligibility

when having a full course load each semester, along with their athletic responsibilities (Birky, 2007). Additionally, collegiate athletes often devote 40 or more hours a week to their sport, which can lead to higher levels of physical and psychological exhaustion (Eitzen, 2009). Devoting so much time to sport can lead athletes to have significantly less time to devote to academic responsibilities and other activities related to future endeavors (i.e., career) (Cogan & Petrie, 1996; Comeaux, 2011; Cosh & Tully, 2014), which may also lead to higher perceived stress over time. These same arguments made for college athletes may apply to non-athlete college student as well. Instead of playing a sport, many non-athlete college students may have to work a full-time job in order to support themselves financially, while also tending to their academic responsibilities. Some data show that approximately 57% of college students work while in school (Hawkins, Hawkins, Smith, & Grant, 2005). Moreover, as graduation approaches, concern for their future may become more prevalent.

Scholarship status is another important variable to the world of college athletics. Research on college athletic scholarships and motivation revealed that either having a scholarship, losing a scholarship, or the hopes of obtaining a scholarship can have significant detrimental effects on motivation in college athletes (Medic, Mack, Wilson, & Starkes, 2007). Scholarships could potentially add another stressor in that the scholarship is predicated on an athlete's success both academically (i.e., staying eligible) and athletically (i.e., performing well), therefore increasing pressure to perform and subsequently, anxiety. Likewise, athletes who may not be on scholarship, such as walk-ons, may feel added pressure to commit to the sport in hopes of earning a scholarship, but still not allowing their academics to suffer in the pursuit of an athletic scholarship. As for injury history, with the plethora of research on how sport injury can affect athlete wellness, and the findings from Simon and Docherty (2014), injury history is

another important factor to examine how it can impact athlete wellness.

Finally, social support has shown to have critical implications for perceived wellness and stress in individuals, particularly in college-aged individuals (Hefner & Eisenberg, 2009). However, if college athletes have to devote so much time to their academic and athletic responsibilities, they may not be able to engage in meaningful social interactions outside of their teammates, thus hindering social support relationships with others outside of their sport (Cogan & Petrie, 1996).

Significance of the Problem

As the wellness definition by the WHO states, physical, psychological, and social components are related to one's overall wellness. Perceived stress is an important concept for college-aged individuals with respect to their perceived wellness, representing an important psychological construct. College students often experience high stress with academic responsibilities and perhaps working to support themselves through school, whereas college athletes have academics and their sport responsibilities, which acts as a job given the hours devoted to sport. It is well understood that stress presents many acute and chronic maladaptive effects on one's health. Specifically, among college students, higher perceptions of stress have been associated with lower overall wellness (Park, Armeli, & Tennen, 2004). Students with higher stress have also reported lower grade point average in school, poorer eating habits, and lower self-esteem (Hudd, Dumlao, Erdmann-Sager, Murray et al., 2000). Hudd and colleagues (2000) found that over 50% of the college students in their study reported high levels of perceived stress over the course of a semester. Unfortunately, in college athletes, studies have mainly delved into the perceptions of stress that athletes have, but the actual effects on wellness are far less understood. The general public usually carries the perception that the collegiate

athlete population is a very healthy group and not encountering wellness issues (Etzel, Watson, Visek, & Maniar, 2006). However, while college athletes may be at an advantage with regards to physical training and other resources when compared to the general college student population, this does not eliminate athletes from experiencing issues with their quality of life. One area of research with college athletes that has consistently shown a strong correlation between stress and wellness is athletes who report higher stress are more likely of incurring a sport injury (Andersen & Williams, 1988; Petrie, 1993).

The Stress-Injury Model (Andersen & Williams, 1988) describes specific antecedents to sport injury, whereby perceived stress is considered a critical component of what would influence injury occurrence in athletes. Hardy and Riehl (1988) examined life stress and its predictive association with sport injury among a group of 86 collegiate athletes from various sports. Results indicated that total life change and negative change were significantly associated with injury frequency. Particularly, for female athletes, total life change significantly predicted injury frequency when compared to males. Additionally, Petrie (1993) examined effects of life stress, coping, anxiety, and playing status in Division I collegiate football players. Results indicated that life stress was predictive of athletic injury, however, it was positive life stress that predicted time-loss, not negative life stress. Petrie stated that positive events, such as becoming a starter and having more role responsibility, may be viewed by an athlete as positive, but later cause higher stress and anxiety levels (i.e., higher performance pressure). An important conclusion reached was that regardless of the event being seen as positive or negative by the athlete, the perception of stress and the actual effects of stress still carry a negative impact. Moreover, stress has also been significantly related to post-injury factors concerning athletes as well (Leddy, Lambert, & Ogles, 1994; Tracey, 2003).

With stress having the potential for multidimensional negative effects on one's wellness, continued research is warranted to determine what specific relationships exist between stress and wellness, particularly between college athletes and non-athlete undergraduate students. Moreover, previous studies (e.g., Andersen & Williams, 1988; Petrie, 1993; VanRensburg, Surujlal and Dhurup (2011) have examined what athletes perceive as stress causing events and what effects stress has on athletes' health in terms of injury, however, research is lacking on the extent to which perceived stress affects global wellness perception in college athletes.

Finally, social wellness (i.e., social support) has often been suggested as a benefit for health, in addition to a valued coping mechanism to improve wellness and decrease stress in the face of adversity. Individuals who do not have a strong social support network in their lives have shown to be affected negatively due to the lack of social interaction (Srivastava & Barmola, 2012). Cohen and Wills (1985) have stated social support can introduce regular positive experiences for an individual to enhance health and well-being. Furthermore, being engaged in a social support network may help avoid many negative situations and decrease the effect of perceived stressors that would potentially cause physical and psychological imbalance (Cohen & Wills). College students with low social support have been shown to have higher depression, anxiety, and suicidal ideation (Hefner & Eisenberg, 2009). Conversely, high social support has been associated with higher perceptions of reports of health and wellness. Hale, Hannum, and Espelage (2005) examined social support and its effect on physical health in a sample of college students. Results showed a significant effect for belonging (i.e., part of a social network), and that being a part of a social network predicted health perceptions for women and predicted physical symptomology for men. Having a stronger sense of belonging with others created better wellness perceptions for women and fewer adverse physical health symptoms for men.

Results among college athletes have also shown the influence of social support for stress and burnout (DeFreese & Smith, 2013), and coping with sport injury (Lu & Yawen, 2013). DeFreese and Smith (2013) examined teammate social support on athlete burnout and self-determination in a sample of collegiate athletes from multiple Division I, II, III, and NAIA universities. The results indicated that lower support availability and satisfaction was significantly related to higher rates of burnout, reduced accomplishment, and devaluation. Lu and Yawen (2013) examined subjective well-being and social support in injured Taiwanese college athletes and found that social support and feelings of hope were significantly related to subjective well-being during injury rehabilitation.

Social support seems to have a positive effect for individuals who encounter stressors from differing sources (i.e., college transition, sport injury, etc.) (Ruthig, Haynes, Stupinsky, and Perry, 2009; Yang, Peek-Asa, Lowe, Heiden, et al. (2010). Continued examination of the role that social support plays in the perceived wellness and perceived stress of college athletes can significantly aid in determining those who may be in need of additional social support resources. However, very few researchers have examined perceived wellness with perceived stress and social support in collegiate athletes and college students. Additionally, studies that have been conducted have included rather limited population samples of college athletes and other variables. Moreover, independent variables including class groups (i.e., year in school), number of credit hours enrolled in, number of hours per week devoted to work or sport, scholarship status (i.e., academic/athletic), and injury history are all in need of further examination for comparison between the specific populations of college athletes and non-athlete undergraduate students. If differences do exist in perceived wellness, perceived stress, and social support among different class groups of college athletes, interventions may be tailored to fit the specific group of

athletes such as adjustment for freshman, or retirement and transition for seniors. Furthermore, understanding the role that academic workload, sport workload, scholarship status, and injury history play into wellness, stress, and social support can give a clearer picture of the actual applied needs college athletes require by physical and mental health professionals to help maintain a positive quality of life while enrolled in college. Making these comparisons with a non-athlete college student population will also help to determine if collegiate sport may indeed lead to diminished wellness later in life as thought by Simon and Docherty (2014).

Therefore, the aim of the current study was to assess the aforementioned variables in a larger and more diverse sample of college student-athletes, compared with a larger and more diverse sample of college students who are not athletes. With the results of Simon and Docherty (2014) demonstrating that long after their careers are over, college athletes have lower quality of life than non-athletes, collegiate sport may be causing health and wellness concerns that may linger into adulthood. It is therefore important to examine wellness perceptions, in addition to perceived stress and social support of currently competing college athletes and compare them to a sample of non-athlete college undergraduate students.

Purpose of the Study

The purpose of the current study was to assess perceived wellness, perceived stress, and social support of male and female collegiate student-athletes and non-athlete students and examine their interrelationships.

Hypotheses

H1: College student-athletes will have lower perceived wellness than non-athlete undergraduate students.

H2: College student-athletes will have higher perceived stress than non-athlete undergraduate students.

H3: Higher levels of perceived stress will result in lower perceptions of wellness in college athletes and non–athlete undergraduate students.

H4: Higher social support satisfaction will result in lower perceived stress in college athletes and non-athlete undergraduate students.

H5: Higher social support satisfaction will result in higher perceptions of wellness in college athletes and non-athlete undergraduate students.

Exploratory Questions

EQ1: Will there be differences in reliance on and satisfaction of social support between college athletes and non-athlete undergraduate students?

EQ2: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived wellness in college athletes and non-athlete undergraduate students?

EQ3: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived stress in college athletes and non-athlete undergraduate students?

EQ4: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to social support satisfaction in college athletes and non-athlete undergraduate students?

Operational Definition of Terms

Collegiate Athlete: Athletes who are currently on a listed on a collegiate varsity team roster, and still have at least one season of eligibility remaining.

Class Groups: The current academic class participants are considered (i.e., Freshman, Sophomore, Junior, Senior, 5th year senior, 6 or more years).

Credit Hours: The number of academic units participants are currently enrolled in.

Non-Athlete Undergraduate Student: Undergraduate college students who are currently enrolled but are not participating on a varsity athletic team.

Perceived Stress: An experience where an individual perceives threat or burden (Pearlin, 1989).

Perceived Wellness: Defined according to the World Health Organization as the "physical, mental, and social well-being, not merely in the absence of disease" (WHO, 1948).

Social Support: Functions that are performed for an individual under distress by significant others such as family, friends, and other varied individuals (Thoits, 1986).

Limitations

The current study may be limited by the following. (a) The ability of participants to accurately and honestly self-report perceived wellness, perceived stress, and social support on the psychometric questionnaires. False survey responses may threaten validity and reliability of responses on the study's questionnaires. This is defined as the Hawthorne Effect; which is as an alteration in behavior or performance resulting from the awareness of being involved in a research study (Campbell, Maxey, & Watson, 1995). (b) Inability to gain access or athletes' refusal to participate the study, (c) selection bias due to employing a convenient rather than random sample, (d) all participants will be located at a single major Division I university located in the Midwest United States, and (d) data will be collected during multiple points of the semester and no comparisons will be made with regards to the study variables and timing of the semester.

CHAPTER 2

LITERATURE REVIEW

Overview of Wellness

College students living away from home actively become responsible for their own health and well-being as they mature into adulthood (Preston, Green, & Irwin, 1990). College can be an exciting time of new experiences and independence; likewise, students are also presented with new challenges and potential stressful experiences (Jones, Harel, & Levinson, 1992). Recently, it has been considered an important initiative to reduce the frequency of health issues among college students, as well as preventing behaviors that would threaten wellness (Jackson, Tucker, & Herman, 2007). Wellness is defined as the "physical, mental, and social well-being, not merely in the absence of disease" (WHO, 1948). More recently, the term Health-Related Quality of Life (HRQL) has been used in research, but can be considered synonymous with wellness as it relates to the health and well-being of individuals, not just in the absence of illness or other health maladies.

As research has well documented, physical activity has large implications for the health and wellness of an individual on multiple levels (i.e., physical, psychological, social) (Penedo & Dahn, 2005). It is well known the numerous benefits that physical activity has for one's wellness, including, reducing risk of chronic diseases, maintaining the body's physical and mental function over the life-span, and improving overall longevity (Blair & Morris, 2009). Physical activity has been shown to have significantly positive effects on the physical and mental quality of life of individuals of all ages (Harris, Cronkite, & Moos, 2006; North, McCullagh, & Tran, 1990; Stewart, Hays, Wells, Rogers, et al., 1994; VanKim & Nelson, 2013). However, it

has become increasingly apparent that college students are not taking advantage by engaging in enough physical activity.

For example, Bray and Born (2004) examined 145 Canadian students and their physical activity levels during their last 2 months of high school and their first 2 months of college. The researchers had individuals report their vigorous physical activity due to individuals recalling vigorous activity more accurately. Vigorous activity included but was not limited to running, jogging, biking, basketball, and aerobics. Students were instructed to provide the average number of physical activity sessions they participated in per week and the duration of each session. Results showed a significant decrease of vigorous physical activity participation from the time students graduated high school to their first 2 months in college. Furthermore, students' vigorous activity levels that remained high reported greater positive mood and lower tension and fatigue when compared to students with lower activity levels reported.

Researchers have also shown that college students consider wellness to be a dynamic principle that goes beyond just the physical, including psychological and social aspects which are often interconnected (Archer, Probert, & Gage, 1987). For example, studies have indicated that college students with a higher social support network tend to experience lower levels of psychological stress, which translates into greater psychological wellness (Brougham, Zail, Mendoza, & Miller, 2009; Dwyer & Cummings, 2001; Wang & Castaneda-Sound, 2008). Hermon and Hazler (1999) reported that in addition to self-regulation and satisfaction with work, college students' friendships were a strong contributor to perceived psychological wellness. Finally, college students who reported a greater perceived social support were better equipped to handle the academic pressures of college life (Dwyer & Cummings, 2001).

When considering the college athlete population, it is common knowledge that athletes train and are expected to be in peak physical condition. However, this does not preclude college athletes from experiencing problems with to their physical wellness (i.e., injury). Moreover, college athletes will likely encounter similar stressors as collegiate students such as time constraints, concern for future, and financial issues. However, college athletes are also presented with many of their own unique challenges while progressing through their college years. Many of these unique challenges specific to the college athlete population include travel demands, demands on their physical and psychological preparedness for competition, social integration, athletic injury, and simply learning to balance both sport and education as a whole (Brewer, Linder, & Phelps, 1995; Cosh & Tully, 2014; Etzel, Watson, Visek, & Maniar, 2006; McAllister, Motamedi, Hame, Shapiro, et al., 2001; Royal & Rossi, 1993). Even with heightened resources that many universities provide their athletes (i.e., clothing, academic tutoring, physical and mental healthcare, etc.), the lifestyle of college athletes with academic and athletic demands previously discussed can certainly lead to various wellness issues.

Athletes have reported that these aforementioned challenges often prove difficult and can be stressful for them as they try to manage all aspects of their college experience as a student and athlete (Cosh & Tully, 2014, Etzel et al. 2006). These challenges can undoubtedly cause impositions to perceived health and wellness. Etzel and colleagues discuss how the general public usually considers the collegiate athlete population to be a very healthy group and one that doesn't need help with wellness issues. While college athletes may be at an advantage with regards to physical training and other resources, this does not eliminate them from experiencing issues with their quality of life. Researchers have indicated that the National Collegiate Athletic Association (NCAA) has taken a stronger position in recent years, citing the importance of

helping college athletes maintain quality of life on all levels (Brown & Blanton, 2002; Etzel et al., 2006). With this in mind, understanding the theoretical underpinnings of wellness research seems warranted. The following section will discuss two widely used models in research and how each has contributed to our knowledge of wellness in individuals.

Review of Two Existing Wellness Models

Although the WHO first defined wellness in the 1940s, Dr. Bill Hettler was considered by many to be the leading figure of the modern wellness movement. In the late 1970's, Dr. Hettler created one of the first known theoretical wellness models, and subsequently founded the National Wellness Institute. This hexagonal interdependent model included six dimensions of wellness: emotional, occupational, physical, social, intellectual, and spiritual. Hettler claimed that by applying these six factors of wellness, an individual could become aware of the interrelationship of each dimension, and how each would contribute to a healthy life. Additionally, Hettler's model was intended to explain the way various lifestyle aspects affect wellness, such as how a person contributes to their environment, the enrichment of life through work, development of belief systems, physical activity benefits and healthy eating habits, personal responsibility, self-esteem, self-control, and sense of direction, and engaging in creative mental activities (National Wellness Institute, 2014). However, moving forward other researchers began expanding upon this concept of wellness, believing that wellness should be assessed more from of a counseling perspective rather than a physical health and science perspective (i.e., Hettler's Model) (Myers, Mobley, & Booth, 2003; Myers & Sweeney, 2008).

Two of the most notable models that were created from a counseling perspective were the Wheel of Wellness (Sweeney & Witmer, 1991; Witmer & Sweeney, 1992) and the Indivisible-Self Wellness Model (Myers & Sweeney, 2005). These models were theoretically based using

Alderian Individual Psychology (Adler 1927, 1954), which expresses many factors critical to the wellness paradigm. Adler considered an individual as a product of his or her own creation, that is, an individual is responsible for his or her own being (Leibin, 1981). Adler's belief for man was that he "…contemplates the world, and his being in it, he reorganizes this world and himself" (Leibin). Adler's Individual Psychology placed large emphasis on the whole individual, highlighting the importance of the entirety of being for an individual, and not just the sum of the parts (DeRobertis, 2012; Myers & Sweeney, 2007). Moreover, Adler was a strong proponent for the socialization of individuals and that humans have an inclination to strive for optimal functioning (Overholser, 2010). Vaughan (1927) interprets Adler's position as, "Every one, healthy or diseased, lives to achieve his peculiar ideal of superiority in his own particular way." With this in mind, Witmer and Sweeney (1992) stated that the creation of a model that represents wellness over the lifespan, with the major themes being mind, body, spirit, and community, was important to further our understanding of wellness and quality of life.

Wheel of Wellness. Sweeney and Witmer (1991) and Witmer and Sweeney (1992) created the Wheel of Wellness with the premise that an individual's wellness was based on their whole being, a central tenet of Adler's psychological system. The wheel encompasses five life tasks including spirituality, self-regulation, work/leisure, friendship and love. The center of the wellness wheel is spirituality, which includes oneness, purposiveness, optimism, and values; all are important qualities of an individual's optimal functioning in daily life, or an athletes' optimal performance in sport.

The next life task in the wheel is self-regulation, which includes self-worth, sense of control, realistic beliefs, emotional responsiveness, physical fitness and nutrition, humor, and problem solving/creativity (Witmer & Sweeney, 1992). It is believed that through these factors,

one can direct their life in a way that is healthy and productive. Myers, Sweeney, and Witmer (2000) added five new subtasks to self-regulation that included gender identity, cultural identity, stress management, self-care and emotional awareness/coping. Following self-regulation is work/leisure, which constitutes fundamental life tasks that provide economical, psychological, and social benefits. Kobasa (1982) stated that job satisfaction within the work domain often contributes to various psychological wellness factors such as commitment, challenge, and growth. Leisure includes activities that individuals will engage in for fun such as hiking, camping, bike riding, or community sport recreation programs. Heintzman (2002) postulated a link between leisure and spiritual well-being, stating that spiritual wellness may be a resulting factor of leisure, whereby engaging in leisure activities gives the individual an opportunity to experience spirituality, or cope with problems that may include spiritual components.

The fourth life task is friendship and is made up of the social connectedness that one has with important persons in their social circle (i.e., family, friends, significant others). Myers and colleagues (2000) reference Adler's position that human beings have a tendency toward social interest, that is, the need to be connected with other individuals. Within sport, athletes will often develop strong bonds with their teammates and coaches given the shared interest, investment in sport, and time spent together, especially at the collegiate level. Corbillon, Crossman and Jamieson (2008) discussed how the strength of these social bonds within the team contributes to athlete well-being when athletes incur various life stressors (i.e., injury). Finally, the fifth life task is love, which involves long-term and intimate or trusting relationships between individuals. Research indicates that love can be one of multiple positive predictors in health and well-being among adults (Acton & Malathum, 2000). Berkman and Syme (1979) revealed that individuals involved in intimate relationships had lower mortality rates than individuals who are socially

isolated. Moreover, Berman and Syme hypothesized based on their results that individuals who are considered to be socially isolated may be more likely to engage in behavior detriment to one's health (i.e., smoking, alcohol consumption, low physical activity rates).

The five life tasks of the Wheel of Wellness are then broken down further into seven life forces that include family, religion, education, community, media, government, and business (Witmer & Sweeney, 1992). Witmer and Sweeney state that factors contributing to a strong family involve commitment to one another, communication skills, coping ability in a crisis, and time spent with one another. Religion includes the belief that a higher power exists and provides purpose or direction in one's life, and individuals may gain a sense of wellness from a religious belief system (Westgate, 1996). Nelms, Hutchins, Hutchins, and Pursley (2007) found that college students who included spiritual beliefs when making decisions that involved risk experienced better health outcomes. Additionally, Anye, Gallien, Bian, and Moulton (2013) reported that college students who had a higher sense of spiritual wellness were more likely to participate in spiritual activities and in turn, report higher overall quality of life.

Education may involve scholastic achievement or general acquisition of skills and knowledge throughout the lifespan (Witmer & Sweeney, 1992). Community often reaches beyond family and incorporates other aspects of social integration such as churches, support groups, and work groups that can aid in the social wellness of an individual. For media, McCombs (2012) states, "In this process of learning about the world around us through a continuous process of civic osmosis, the Internet and a growing host of electronic devices add dynamic and major channels to this gestalt." Thus, media provides a strong influence on the shape and norms of society.

Government and business, the final two life forces, bring together factors of how society functions and the economic force that drives it. The government of the United States has placed a large importance on increasing population wellness and decreasing health care costs by providing wellness programs and resources to U.S. citizens (Benavides & David, 2010). Business is what drives the economy whereby a society can exist, however the success of business is dependent on the wellness of its workers, that is, businesses where the workers have higher wellness have been shown to have higher productivity, job satisfaction, and lower absenteeism (Lee, Blake, & Lloyd, 2010). Beyond these life forces of the wellness wheel, exists global events. These global events are aspects of life that effect wellness on a large scale. For example, global events such as war, famine, disease, pollution, poverty, and economic crises are factors by which wellness can be lowered in mass populations. Witmer and Sweeney (1992) stated that their wellness wheel was based on research that had been conducted in multiple fields including social, psychological, medical, and behavioral science. The model can be used to identify and examine characteristics of one's wellness, thereby increasing the ability of health care professionals in different fields to implement wellness interventions targeting specific aspects of the wheel. While the Wheel of Wellness lends itself to a useful interpretation of wellness for the general public, the wellness components were not contextually organized in the Wheel model, which did not allow for a more organized explanation of the interrelationships between wellness components. Essentially, the components of the wheel of wellness seemed to stand on their own rather than being categorized under specific contexts of wellness.

Hattie, Myers, and Sweeney (2004) examined the theoretical components of the Wheel of Wellness by conducting a factor analysis of the Wellness Evaluation Lifestyle (WEL) questionnaire (Myers, 1998; Myers, Witmer, and Sweeney, 1996). The WEL is an instrument

used to assess 17 wellness constructs of the Wheel of Wellness model. The WEL was administered one time to over 3000 participants including children to adolescents (10-18 years), college students (18-25 years), young adults (26-35 years), middle-aged adults (36-55 years) and older adults (56+ years). They found that five second-order factors (i.e., Essential Self, Social Self, Creative Self, Coping Self, and Physical Self) and one higher factor called "wellness" originated from the factor analysis. These factors were able to organize the 17 wellness constructs into a more contextual fashion, resulting in a new explanation of the relationships among the wellness factors of the Wheel of Wellness model (Myers, Luecht, & Sweeney, 2004). These results provided an inclination for re-examining the structure of the Wheel of Wellness (Hattie et al., 2004), and subsequently resulted in a new model of wellness (Myers et al., 2004; Myers & Sweeney, 2005). Hattie and colleagues concluded that while the Wheel of Wellness would be useful as a base for practitioners to help explain wellness to clients, the new proposed model with the additional second order factors and higher order factor of wellness may be more suitable for clinical settings.

The Indivisible Self Wellness Model. Following the re-examination of the Wheel of Wellness, Myers and Sweeney (2005) created another model called the Indivisible Self (IS) Wellness Model. The IS-model was created based on the factor analysis results of the Wheel of Wellness by Hattie et al. (2004) that produced five second-order factors and a higher order factor of wellness to contextually categorize the 17 constructs of the Wheel of Wellness. In other words, the 17 constructs of the Wheel of Wellness were now organized under the specific categorization of the five second-order factors and the higher order factor of wellness in the IS Wellness Model. The higher order factor of wellness in the IS model is considered the indivisible factor of an individual. This supports Adler's view that an individual is a whole being, greater

than just the sum of its parts (DeRobertis, 2012; Myers & Sweeney, 2007). The IS-model then consists of the five second-order components as described by Hattie et al., which then include the 17 third-order factors from the original Wheel of Wellness. This new model was meant to be an advancement on the Wheel of Wellness centered on holism where the "self" is at the very core of the model.

The second-order (and third-order components) components are the Essential Self (i.e., spirituality, gender identity, self care, cultural identity), Social Self (i.e., friendship, love), Creative Self (i.e., thinking, emotions, control, positive humor, work), Coping Self (i.e., stress-management, realistic beliefs, self-worth, leisure), and the Physical Self (i.e., exercise, nutrition) (Myers & Sweeney, 2005). The IS model also includes contextual variables of local (safety), institutional (policies and law), global (world events), and chronometrical (lifespan). Local contexts include family, neighborhoods, and communities that are the central systems of everyday life. Institutional contexts include education, religion, government and business. Global context is related to politics, culture, global events, environment, media, and community. The final context of chronometrical involves the assumption that people change over time as a result of experience. Myers and Sweeney state that progression in a positive manner over time is essential for the achievement of a high level of wellness. Myers and Sweeney (2005) state that in using the IS model, the importance of the wellness perspective rests when events happen that would threaten one's wellness and the holistic orientation of the IS model shows that other components can be used to enhance functioning wherever needed. This model provides a stronger and more relevant way of assessing wellness in multiple populations given that the 17 components of the Wheel of Wellness were now organized under a specific categorization (i.e., five second-order factors and the higher order factor of wellness).

Review of Existing Wellness Questionnaires

Within the wellness domain, psychometrically evaluating components of wellness helps to construct and reinforce theoretical positions taken by researchers. The following discussion will focus on three wellness questionnaires that have been well validated in the research. The Wellness Evaluation of Lifestyle (WEL) and the Five Factor WEL Inventory are important to discuss given that these questionnaires directly coincide with the Wheel of Wellness and the IS model respectively. Moreover, the SF-36v2 is one of the most widely recognized and used questionnaires in the wellness research.

The Wellness Evaluation of Lifestyle. The WEL (Myers, 1998; Myers, Witmer, and Sweeney, 1996) was developed to assess each of the components in the Wheel of Wellness model discussed earlier. Hattie and colleagues (2004) conducted a factor analysis on the 103-item version WEL that was administered to over 3000 participants ranging in age from 10-56+ years. The WEL is rated on a 5-point Likert scale ranging from strongly agree to strongly disagree. Hattie et al. reported that the average loadings of items on the expected factors were sufficient at .62 with the highest factor representing social self, specifically friendship at .82 and lowest factor representing coping self (realistic beliefs) at .25. Hattie et al. described that while each of the items representing the 17 components of wellness from the original Wheel of Wellness were sufficiently loading on their expected factors, as previously indicated, five second-order factors and the higher order factor of wellness emerged as contextual organizational variables.

Researchers have also reported high test-retest reliability for the WEL. Specifically, Myers et al. (2000) reported test-retest reliability for the WEL to range from .90 to .96 for all scales. There is also a 123-item version WEL in which Myers et al. (2000) reported reliability

coefficients of .61 to .89 for the 17 factors of wellness from the Wheel of Wellness. In conclusion it appears that the WEL has acceptable reliability in populations ranging from children to adults. Convergent and divergent validity for the WEL was also reported (Myers, 1998).

Five Factor-WEL Inventory. The Five-Factor WEL (5F-WEL; Myers & Sweeney, 1999) inventory is an updated version of the WEL inventory, which was modified based on the previously discussed statistical analyses involving the WEL. The 5F-WEL survey was designed to measure the domains of the indivisible self from the IS Wellness Model (Myers & Sweeney, 2005), specifically the five second-order factors of Essential Self, Social Self, Creative Self, Coping Self, and Physical Self and the higher order factor of wellness which originated from Hattie and colleagues (2004) factor analysis of the WEL inventory. The 5F-WEL includes 73 items rated on a 5-point Likert scale. Scores range from 25-100, with scores closer to 100 indicating greater wellness. Hattie et al. (2004) reported reliability scores for the 5F-WEL at .92 for the higher order of wellness (i.e., total wellness score), .58 to .73 for the second order factors (i.e., Essential, Social, Creative, Coping, and Physical Self), .60 to .94 for the 17 third order factors.

Short Form-36v2. The Short Form-36 survey (SF-36: Ware, 1988; Ware & Sherbourne, 1992) was created in order to satisfy a minimum requirement of psychometric standard for comparisons among groups (Ware, Kosinski, Bjorner, Turner-Bowker, et al., 2008). The SF-36 was deemed an improvement on how wellness was evaluated, given that it was shorter and more practical when administering to large populations (Ware et al., 2008). However, after years of research and examination, the SF-36 was revised and improved upon into the current SF-36v2 (SF-36v2; Ware, & Kosinski, 1996; Ware et al., 2008). This survey is not tied to either the

Wheel of Wellness or the IS-model, but rather a generic wellness measure that is not tied to any specific wellness model. It is important to discuss the SF-36v2 given its extensive use in the research of wellness among multiple populations.

The SF-36v2 is a 36-item questionnaire measuring eight scales of wellness: physical functioning, social functioning, role limitations due to physical problems, role limitations due to emotional problems, vitality, bodily pain, general health perception, and mental health. In addition to these eight scales, physical and mental composite scores exist for overall physical and mental wellness. Scores range on a standardized scale from 0 to 100. A score of 0 to 49 is considered below average, a score of 50 is average and 51 to 100 are above average. Internal consistency for the SF-36v2 has been reported ranging from .83 to .95 (Ware et al., 2008). Overall, physical component summary reliability was reported at .95 and mental component summary reliability was reported at .93. Additionally, reliability for each subscale of the SF-36v2 was reported at .94 for Physical Functioning, Role- Physical at .95, Bodily Pain at .90, General Health at .83, Vitality at .85, Social Functioning at .87, Role-Emotional at .93 and finally .85 for Mental Health. Moreover, internal consistency between genders has been reported between at .83 to .96 for males and .83 to .96 for females (Ware et al., 2008).

One of the ideal advancements for this particular survey was the structure of the survey itself and its practicality of administration. With much lengthier health assessment surveys in existence, Ware and colleagues (2008) concluded that the SF-36v2 was more research-friendly with regards to assessment time and the monetary cost of collecting research data. The SF-36v2 survey can be used to assess a variety of both healthy and non-healthy adult populations. Some of the purposes for using this survey may include assessing and evaluating diseases or other health-related issues, understanding how individuals with and/or without health maladies operate

in their daily functioning, and overall perceptions of health and how they impact an individual's well-being.

The SF-36v2 is not disease or treatment specific, which allows for multiple valid comparisons across groups with differing health-related issues. For example, Turner-Bowker, Saris-Baglama, and DeRosa (2013) assessed the validity and reliability of a computerized version of the SF-36v2, which was administered to 180 individuals that were also subjects in a larger health outcomes research project. The purpose of this study was to assess the survey's ability to decipher differences in headache pain among individuals aged 18-75+ years. Results showed that patients with severe headache pain had lower overall wellness scores than patients with mild or moderate pain ratings. The researchers also reported that reliability ranged from .81 to .95 for the eight scales of wellness on the SF-36v2. Thus, the SF-36v2 is a reliable and valid questionnaire used to measure health-related quality of life in various populations.

While the previously discussed measures of wellness, along with others in existence have shown to be useful for categorizing and measuring wellness among multiple populations, it is important to note that there is some contention among researchers on what is considered the proper definition of wellness. There is not a gold standard definition of wellness, which may cast doubt on the appropriateness of using certain instruments when assessing wellness (Rachele, Washington, Barwais, et al. 2013). Therefore, careful consideration must be taken when selecting an instrument to assess wellness.

Review of Wellness in General College Student Population

While the literature of HRQL ranges among all ages and populations, for the purposes of this dissertation the focus will be on college student population. As previously mentioned,

researchers have considered the importance of reducing the frequency of health issues among college students, in addition to preventing behaviors that would threaten wellness (Jackson, Tucker, & Herman, 2007). Thus, garnering an understanding into the wellness behaviors of college students seems warranted.

Myers and Mobley (2004) examined a database of over 1,500 undergraduate students who had completed the 5F-WEL inventory. The authors separated the students into two groups, traditional students (i.e., aged 24 and under) and non-traditional students (i.e., aged 25+). There were a total of 1,249 traditional college students and 318 non-traditional college students examined for this study. The authors also compared this database with 702 non-student adults who had completed the 5F-WEL. Results showed that when compared to non-student adults, undergraduate students (i.e., traditional and non-traditional) scored lower on multiple wellness factors on the 5F-WEL, including the social, essential, and creative self. Group comparisons between traditional and non-traditional students revealed that traditional college students had an overall lower level of wellness. Furthermore, the authors noted that the traditional college student group scored significantly low on the realistic beliefs scale of the 5F-WEL.

The authors contend that traditional college students are likely to have unrealistic beliefs or standards (i.e., having to be liked by everyone around them), and thus perceive a low sense of wellness in this area if students feel they are not living up to these beliefs or standards. When compared to non-student adults, traditional college students also scored lower on self-care. Myers and Mobley (2004) did not consider this surprising given the nature of college students' behavior during the ages of 18-24 with over-consumption of alcohol being one of the primary behaviors. Moreover, traditional college students scored lower on social self, primarily love and friendship, when compared to non-student adults. It is important to note that traditional and non-

traditional college students did score higher on exercise and leisure when compared to non-student adults. The authors state that given the access to recreational facilities on campus, it is likely this group would have higher exercise and leisure scores. Additionally, Myers and Mobley support the notion that physical exercise and leisure activities can contribute greatly to physical wellness perceptions, and overall perceptions of wellness.

In contrast to Myers and Mobley who reported higher levels of exercise, Buckworth and Nigg (2004) reported that college students might not be engaging in behaviors that would enhance their wellness. Specifically, Buckworth and Nigg (2004) assessed the relationship between physical activity, exercise, and sedentary behavior in 493 college students. The students were enrolled in various conditioning activity classes including aerobic exercise, weight lifting, and jogging. Students completed questionnaires at the beginning of the course. Results showed that over half of respondents were not meeting the empirically supported recommended level of weekly physical activity. Interestingly, older students spent more time at the computer when compared to younger students. With regards to sex differences, increasing age was negatively related to exercise in females, while increasing age was positively related to exercise in males. More specifically, as females aged, physical activity levels were lower. Males who increased in age increased their physical activity levels. Additionally, time spent at the computer had a negative relationship with exercise for males and time spent watching television had a negative relationship with exercise for females. The authors suggest that college wellness specialists should design specialized intervention strategies aimed at targeting specific sedentary activity times (i.e., computer, watching television).

Gieck and Olsen (2007) conducted a comprehensive study, examining 41 college students who were considered to be obese and/or sedentary, and engaging in an 11-week walking

program. Gieck and Olsen used Hettler's model of wellness as a means of identifying goals related to achieving wellness across multiple domains. There were multiple data points including pre-program assessment of body composition, baseline measure of walking steps for a seven day period, attending five bi-monthly classes over the 11-week period and recording walking steps during the classes, and knowledge related to wellness concepts (i.e., wellness principles, physical, spiritual, emotional wellness, and nutritional concepts) taught during the classes. With regards to the classes, the beginning of each class involved an assessment of knowledge gained from the previous class using a 31-item survey to assess participants' knowledge gained in holistic principles of wellness. Posttest assessment of body composition occurred during the final week of the program. Gieck and Olsen reported promising results, demonstrating that participating in the 11-week program resulted in increased activity, decrease of body composition, and increased knowledge and awareness of wellness concepts. The authors state that using wellness concepts derived from a model perspective like Hettler can be useful in designing interventions for college students and lifestyle wellness behavior changes.

LaFountaine, Neisen, and Parsons (2006) investigated wellness in first year college students by administering the WEL inventory. Results revealed that students scored highest on wellness factors of love and sense of worth. The authors indicated that it is possible students were able to make new friends, have a sense of fellowship, and foster social connections, which can contribute to students' emotional wellness. However, nutritional habits and stress management were the lowest wellness factors, indicating that students had a hard time eating healthy and dealing with the added pressure of college and performance in class. With specific regards to nutrition and stress management, the authors stated that officials at the university level (i.e., professors, advisors, health specialists) should engage in discussions with students about

their experiences, while also highlighting research that could be useful in bringing greater awareness to the students regarding issues that may threaten wellness.

Researchers have discussed the importance of introducing wellness programs on college campuses to help students maintain greater health and wellness (Hettler, 1980; Fullerton, 2011). As a result, universities have begun to offer lifetime wellness courses to college students. McCormick and Lockwood (2006) examined perceptions of 225 undergraduate college students who were enrolled in a university lifetime wellness course. Students were given pre- and post surveys to assess their perceived and actual knowledge of various topics that were taught in the course. Results showed that students' perception of their knowledge and actual knowledge significantly improved in all health and wellness topics (i.e., overall wellness, muscular strength and flexibility, cardiovascular health and endurance, cancer, and substance abuse) after a semester long course on wellness.

Similarly, Robbins, Powers, and Rushton (1992) examined knowledge and attitudes in over 1100 undergraduate students who took a healthy lifestyle university course. Their results showed that students who took the course perceived positive changes in wellness attitudes. Additionally, students' overall level of knowledge on healthy living also increased. This seems to support the notion by Hettler (1980) and Fullerton (2011) that universities need to consider the importance of properly creating and running wellness programs for the advancement and well-being of their students.

Lockwood and Wohl (2012) also engaged in a study to examine the effectiveness of a 15-week wellness course in 71 undergraduate college students. Using a pre- and post-test design, the authors' aim was to determine if the wellness course the students had taken over the semester caused changes in global self-efficacy, physical self-efficacy, and general wellness behaviors.

Results yielded significant changes in physical fitness (i.e., rise in physical activity levels) and nutritional habits, physical self-perception, self-efficacy, and ability. The authors suggest that these results are strong evidence for the success of wellness courses and that these courses can positively impact self-efficacy. The authors concluded that the wellness course enhanced the knowledge of students to aid them in positively navigating a change in behavior toward increased well-being. You need to transition into the next section.

Review of Wellness in College Athlete Population

Having the ability to understand and evaluate an athlete's wellness is considered vital for proper care and management of their health and quality of living during their athletic careers. Specifically, among the collegiate athlete population, this has been a consistent topic of discussion and research. It is important to note that many collegiate athletes must cope with issues such as physical injury, psychological distress (i.e., pressure to win), academic issues, and intense physical training during their years in college (Watson & Kissinger, 2007). Health and wellness has been deemed a vital component in creating a healthy, positive experience for collegiate athletes (LaFountaine, 2009). However, it seems apparent that the health and wellness of college athletes may be a growing issue of concern.

Previous researchers have indicated that former athletes have reported increases in tissue and joint degradation, resulting from years of play or injuries sustained during their careers (Kucera, 1994; Lohmander, Oestenberg, Englund, & Roos, 2004). Recently, Simon and Docherty (2014) assessed wellness in 232 former Division I collegiate athletes, and compared them to a subset of 225 non-collegiate athletes, using the PROMIS. Of the 232 former D-I athletes, 60% competed in their sport for 4 years of college, 17% for 3 years, 12% for 5 years (i.e., redshirt), and 11% for 2 years. Additionally, the authors noted that 22% of the athletes

reported playing professionally for at least 1 year following college competition.

Results revealed that former D-I athletes scored lower on physical functioning, depression, fatigue, pain interference, and sleep disturbance when compared to former non-collegiate athletes. Former D-I athletes also reported that 70% had practiced or competed while injured at some point during their collegiate careers. The authors concluded that the cost of playing collegiate sport might be higher than previously thought. Long-term effects on health and wellness are a factor that is often not considered by athletes wanting to play in college. The authors also concluded that more research should be conducted on the health and wellness of college athletes, both during their college careers and years after to determine long-term effects. While the results of this study are certainly pertinent, some limitations do exist. Given the number of college athletes that compete year after year, a much larger and more diverse sample would be needed in order to make claims with regards to trends for specific sports, levels of competition, or differences among sex and ethnicity. Finally, a number of other confounding factors such as aging, genetic propensity to disease, and socioeconomic status may have influenced the results.

Recent research concerning wellness and athletic populations has also focused on injury from sport participation (i.e., Appaneal, Levine, Perna, & Roh, 2009; Kuehl, Snyder, Erickson, & Valovich-McLeod, 2010; Valovich-McLeod, Bay, Parsons, Sauers, et al., 2009). Specifically, Valovich-McLeod, et al. (2009) examined quality of life in recently injured high school athletes, comparing them to a sample of non-injured athletes. Among the total sample of 205 athletes, 160 were uninjured and 45 had injuries ranging from overuse, sprains, and fractures. Results showed that injured athletes reported lower quality of life in domains related to physical functioning, bodily pain, social functioning, and global quality of life perceptions. Valovich-McLeod and

colleagues stipulate that incurring a sport injury can affect more than just the physical component of wellness. It is important to understand the effects that injuries can have across a wide spectrum of an athlete's wellness. While this sample did not comprise college athletes, it still represents a comparative athlete sample, and the different factors that can cause deviations in an athlete's perception of wellness. While this study examined wellness perceptions in injured athletes compared to a group of non-injured athletes, it lacked research on wellness perceptions in a large population of collegiate athletes. Moreover, this study also did not differentiate athletes into groups (i.e., class, sex, injury status, division of competition, etc.) to determine athletes HRQOL.

Kuehl and colleagues (2010) looked into the quality of life perceptions among 302 collegiate athletes with a history of concussion injuries. Participants completed measures related to sport experience, concussion history, headache pain, and quality of life perceptions. Results revealed that athletes with three or more prior concussions had significantly lower scores for bodily pain, vitality, and social functioning when compared to athletes with a history of either one or two or no concussions. Athletes with three or more concussions also reported higher scores on the headache measure, indicating a greater impact of headache pain. These results continue to reinforce the impact that sport injury can have on wellness perceptions in athletes, even after the injury experience has passed. Moreover, professionals charged with improving the wellness of college athletes (i.e., sports medicine staff, sport psychology consultants) can use this information to better identify and help these athletes improve wellness. An advantage of this study was that the authors measured Division I, Division II, and Junior College athletes to give a more accurate picture of a diverse athlete population. However, they only assessed history of concussions and not other previous injuries that may be related to wellness perceptions.

Additionally, this study did not examine sex differences in HRQOL.

Appaneal et al. (2009) examined post-injury depression in 164 high school and college athletes ranging in age from 14 to 24 years who had incurred a sport injury that resulted in time-loss from competition for at least one week. Injured athletes were also matched to an athlete without an injury (i.e., healthy control). Approximately 95% of the athletes in the study had a moderate to severe injury, which required more than one week of time-loss from competition. Multiple data points were obtained during pre-season screenings as part of a larger study the athletes were also subjects in. Once athletes incurred an injury, a self-rated depression measure and semi-structured interviews using a continuous numerical rating for the presence of depressive symptoms were administered. These measures were given across three time intervals: one week, one month, and three months post-injury. Results revealed no differences in pre-injury mood state between non-injured and athletes who would incur an injury; however there was a significant difference in depression scores. Athletes who sustained an injury had higher depression scores than non-injured athletes. It is important to note that depression scores did decrease in injured athletes throughout the rehabilitation process of their injury. Furthermore, results from the interviews indicated that female injured athletes reported higher depression symptoms when compared to their male counterparts.

The findings by Appaneal and colleagues (2009), Valovich-McLeod and colleagues (2009), and Kuehl and colleagues (2010) are important given that injury is a part of the sport experience, and are a common experience for college athletes when compared to the general college population. It is well understood that injury can have deleterious effects on multiple aspects of an athlete's wellness (i.e., physical, psychological, emotional). However, researching quality of life in athletes whether they are injured or not is still lacking. It is apparent that

understanding more about the wellness in college athletes and different factors that may interact is crucial. In order to provide proper strategies to college athletes for wellness enhancement, it is important to first understand what particular factors are salient in affecting college athletes' perception of their wellness.

Watson and Kissinger (2007) examined 62 student-athletes and 95 non student-athletes from a large university, using the 5F-WEL inventory to assess wellness components. Results indicated that mean wellness scores were higher for the non-athletes when compared to student-athletes. While student-athletes scored highest within their group on social self, scores were still significantly lower than their non-athlete peers. The authors contend that due to the demanding schedule of student-athletes (i.e., academics, practice, training, and travel/competition), the opportunity to develop meaningful social interactions may not be the same as it is for non-athlete college students. Student-athletes also scored lower than non-athlete students on essential self, which describes one's meaning and purpose in life. While the findings of this study yield important implications, limitations included a small sample of 62 athletes, which were all located at one university, thus not generalizable to the general collegiate athlete population. Furthermore, consideration was not given to other variables that may influence wellness perceptions such as year in school (i.e., class groups), number of hours per week devoted to work or sports, scholarship status (i.e., academic/athletic), and injury history. Additionally, some studies retrieved their population of non-athlete undergraduate students from one academic college (i.e., College of Education) within the university. While the current dissertation will also examine athletes and non-athlete undergraduate students from one university, class groups, number of hours per week devoted to work or sports, scholarship status, and injury history will be examined in an attempt to fill the gaps. Also, non-athlete undergraduate students will be selected from

multiple academic colleges on campus. Class groups, number of class credit hours enrolled in for the current semester, and number of hours per week devoted to work or sport are indeed related to perceived stressors such as time constraints, concern for future, and financial concerns mentioned by Cosh and Tully (2014). Additionally scholarship status (i.e., academic/athletic), and injury history need to be examined further. Given the prevalence and importance of scholarships, particularly among athletes, the perceived stressors that scholarships bring both academically (i.e., staying eligible) and athletically (i.e., performing well) may increase the pressure to perform. Which, in turn, could increase the amount of anxiety an athlete feels. As for injury history, with the wealth of research on the physical and psychological effects of sport injury, and the findings from Simon and Docherty (2014), injury history would certainly present a worthwhile variable to further examine and understand as it relates to athlete wellness.

VanRensburg, Surujlal and Dhurup (2011) conducted semi-structured interviews with four different focus groups each comprised of eight college athletes attending a South African university. Results revealed multiple trends and important barriers related to wellness in college athletes. The interviews revealed adjustment to be a major barrier to wellness. Athletes highlighted adjusting to a new environment, wrong peer groups, poor time management, and being far from home as significant adjustment issues. However, intellectual and social wellness emerged as salient factors for the athletes. Citing that engaging in activities such as academic work and seeking meaningful interactions with peers were important to maintaining a strong balance. An interesting result was for physical wellness, whereby athletes claimed to not have a healthy diet, or the knowledge to achieve one. Moreover, some of the athletes in the study reported that they never attended medical check-ups except if they were sick. Other barriers that emerged during the interviews were peer pressure to engage in certain activities (i.e., drinking),

demands of sport, academic and social schedule, and lack of funds. VanRensburg and colleagues made recommendations based on the results of their interviews to improve student wellness. Such recommendations included improved peer group interaction, student-athlete counseling sessions, and wellness information being provided through specified wellness days and programs created for student-athletes.

McAllister, Motamedi, Hame, Shapiro, et al. (2001) examined 562 collegiate athletes at a major Division I university, using the SF-36 quality of life assessment. Athletes were assessed before the beginning of their competitive seasons, and responses were compared to an age and sex-matched normative group of non-athletes who had previously completed the SF-36. At the time of assessment, 404 athletes had no injuries, 108 had mild injuries, and 50 had serious injuries. Results showed athletes without injury increased (i.e., higher wellness) in a number of health domains when compared to the normative group, such as emotional, physical, and mental components of wellness. However, results did reveal that injury had a significant negative effect on all health domains measured by the SF-36. For example, the role physical domain significantly dropped in athletes with injury. The researchers suggested that the finding for role physical is expected given that role physical explains problems that arise with work or other activities as a result of physical health (i.e., being unable to play sport due to injury) (Ware, 1988). Interestingly, when non-injured athletes were separated by sport, football players scored relatively low in physical wellness and bodily pain, swimmers/water polo/divers were grouped and scored low on bodily pain, social functioning, and general health, and both basketball and volleyball players scored low on social functioning and general health. Conversely, track and cross-country athletes scored better on physical functioning, baseball/softball and soccer players scored better in bodily pain, social functioning, physical functioning, and general health, and

gymnasts scored better in physical functioning, social functioning, and bodily pain. The authors believe that these improved wellness scores may be due to a lower incidence of physical injury in these sports. Perhaps these observed increases were localized to the specific sample, and not generalizable to the greater collegiate athlete population.

While it has been generally agreed upon that understanding the wellness perceptions of college athletes is important, research is still lacking. The previously reviewed studies have failed to examine wellness in larger sample sizes (Watson & Kissinger, 2007), a more diverse range of participants and more comparison with non-athlete undergraduate samples (Appaneal et al., 2009; Kuehl et al., 2010; Valovich-McLeod et al., 2009), as well as examining multiple independent factors such as class group (i.e., year in school), the number of credit hours enrolled in, number of hours per week devoted to work or sport, scholarship status (i.e., academic/athletic), and injury history that may influence perceptions of wellness, stress, and social support.. The current dissertation will attempt to fill the gaps by assessing wellness, in conjunction with the aforementioned psychological measures not previously examined with wellness in the same population of college athletes and non-athlete undergraduate students.

Introduction to Perceived Stress

Stress can be best described as an experience where an individual perceives threat or burden (Pearlin, 1989). Pearlin identified two main types of stress for an individual, life events and chronic strains. Life events involve experiences that have accrued over time that cause stress, and chronic strains involve issues that occur on a daily basis that may involve a multitude of different factors. With respect to chronic strains, Pearlin alluded to one significant type called role overload. Role overload often involves an individual having to sacrifice the demands of one role in order to maintain the demands of another. College students may experience this with

academics responsibilities and perhaps a part-time or full-time job, whereas college athletes have academics and their sport responsibilities. Hudd et al. (2000) discuss how college students must learn to balance the demands of academics, social growth, and general daily needs in order to function properly. Moreover, college athletes must manage all of the aforementioned demands of college students, in addition to sport. It seems that role overload can most certainly occur for both college students and college athletes. However, research has shown that college students and athletes may also differ in their stress experiences as well.

Symptoms of stress include irritability, emotional instability and tenseness, concentration and memory problems, fatigue, and changes in appetite (Stilger, Etzel, & Lantz, 2001). If stress is not handled properly and/or allowed to culminate over time, long-term health problems may result. Furthermore, there is consistent empirical support for the negative effects of perceived stress on one's health (Cohen & Williamson, 1991; O'Leary, 1990), which has been linked to unhealthy behaviors such as alcohol consumption as a way of coping in college students (Park, Armeli, & Tennen, 2004). As a result, stress has been deemed a serious health concern among the college population (Hudd et al. 2000), therefore, it is important to understand the implications that perceived stress has on the college student and college athlete population, and the relationship with health and wellness.

Perceived Stress in General College Student Population

It is well documented that perceived stress among college students can often lead to unhealthy behaviors, poor health outcomes, and lowered overall wellness (Cohen & Williamson, 1991; O'Leary, 1990; Park, Armeli, & Tennen, 2004). However, the continued need to understand stress among college students is notwithstanding. Hudd and colleagues (2000) engaged in a study to examine the perceived stress of 145 undergraduate college students, and

the likelihood that stress may lead to unhealthy behavior. Results showed that over 50% of the students reported high levels of perceived stress over the course of a semester, with females reporting higher stress levels when compared to males. The researchers also used the results to categorize the students into a higher stress and lower stress group. Students in the higher stress group reported lower satisfaction with their overall health (i.e., weight and fitness level), grade point average in school, and self-esteem. In addition, while most of the students reported eating healthy most of the time, higher stress students were more likely to have eaten poorly (i.e., junk food, soda, and candy) within the past 24 hours of completing the survey. Moreover, students in the higher stress group were less likely to exercise and less likely to get enough perceived sleep on a regular basis. The findings of this study lay a strong foundation for the continued need of examining stress and the resulting physical and psychological implications for students who are considered high stress.

Misra, McKean, West, and Russo (2000) set out to examine academic stressors among a sample of 249 undergraduate students, while also including 67 faculty members who were asked to rate their own perceptions of their students' stressors and response to stressors. Academic stress was determined by five separate categories: frustrations, change, conflict, pressure, and self-imposed pressure. In addition to these academic stressors, four reactions to stressors where also include: physiological, emotional, behavioral, and cognitive. Results revealed that students overall perceived the most stress from pressure and self-imposed stress. Furthermore, females were shown to have higher stress levels than males when specifically related to frustration, self-imposed stress, and pressure. These findings support research that females tend to report higher perceived stress levels when compared to males (i.e., Bouchard & Shih, 2013; Hudd et al., 2000; Rawson, Bloomer, & Kendall, 1994). As Misra and colleagues suggest, it is not due to an actual

inequality in the number of stressors between males and females, rather that females are rating their experiences as having a greater stressful effect than males.

According to Misra and colleagues (2000) the most common reaction to stress among the students overall was emotional upheaval such as fear, anxiety, worry, depression, and anger. Other reactions, although less frequent were behavioral (i.e., crying, abuse of the self and of others, and smoking) and physiological (i.e., trembling, sweating, and head and body aches). Class differences emerged among the results, with freshman and sophomore students indicating higher levels of stress when compared to junior and senior students. With regards to faculty members, their responses indicated a higher perception of stress among their students than what was actually perceived by the students. Misra et al. concluded that this may be due to the fact that faculty members may only be observing students in the classroom setting, where students are likely to engage in conversation expressing their academic stressors and exhibit stressful behavior. However, when students are away from this setting, they may be able to engage in leisure activities to alleviate the stress.

Li and Lindsey (2013) investigated health promotion behavior and perceived stress among 319 undergraduate college students. It is important to note that the authors used the Perceived Stress Scale as a measure for stress. This scale ranges from 0 to 56, with numbers closer to 56 indicating greater stress, and a cutoff score of 20 indicating low stress. Health promotion was assessed using a 52-item questionnaire that examines health-related behaviors in six different scales including: healthy responsibility, physical activity, nutrition, interpersonal relationships, spiritual growth, and stress management. Results revealed that at the time of data collection, almost half of the sample self-reported their health as being very good or excellent. However, a relatively low number of students, both male and female, reported discussing health

concerns with a health professional, in addition to a low number of students who also reporting unusual signs or symptoms to a health professional. Specifically related to sex differences, results revealed that female students were more likely to engage in meaning interpersonal relationships, but male students were more likely to engage in all other health promoting behaviors. Moreover, of the 319 participants, 215 reported having a moderate stress level, with male students having lower stress levels and higher likelihood to engage in stress-reduction practices when compared to females.

Li and Lindsey's (2013) sample averaged a stress score of 23.53 but indicate that this could be due to the timing of the survey. The authors state that data was collected early in the semester before midterms, which could indicate that students hadn't hit the brunt of the semester yet where higher stress levels usually ensure. When discussing stress in college students, it is vital to take into account that timing of the semester can play a role into the stress perceptions of these students (Brown, 1986). It is also reasonable to assume that this same comparison can be made for college athletes in regards to in-season versus off-season training and scheduling. The authors further separated the students into an overall higher stress and lower stress student group. Results indicated that lower stress students were more likely to engage in health promotion practices when compared to higher stress students. The authors do stipulate that both the higher and lower stress group could benefit from greater participation in health promotion behavior given that a relatively low mean difference existed between students who "sometimes" or "often" participated in health promoting behavior as compared to "routinely". Furthermore, the importance of continued educational efficiency for college students, emphasizing the effects of stress and how participating in health promoting behaviors can mitigate those effects. This is especially true for students who would be characterized as having high stress.

Brougham, Zail, Mendoza, and Miller (2009) examined a sample of 166 college students from a liberal arts college located in the west region of the United States. The authors collected data regarding coping responses to stress and factors that may influence coping responses such as sex, ethnicity, employment status, class standing, and on/off campus housing. Results revealed that female students reported greater levels of stress and greater use of self-help and emotion-focused coping strategies when compared to men. Both female and male students reported the use of self-punishment in the response to various stressors. Correlations were also found between daily hassles and class standing, and between employment and financial stress in females. Moreover, for males, correlations were shown between employment and financial stress and daily hassles, and between being non-Caucasian and financial stress. While these results yielded important implications for stress among college undergraduates, a larger and more diverse sample is needed given that over half of the sample for this study were Caucasian and did not have to work to support themselves in school. It is important to note however that approximately half of the sample reported still working at least 20 hours per week. Moreover, a larger and more diverse sample size would allow for class group comparisons.

Understanding the perceived stress that college students experience is important in order to initiate strategies to help these students cope more effectively, thus improving health and wellness. Largo-Wight, Peterson, and Chen (2005) discussed implications of perceived problem solving as it relates to stress and well-being. In a sample of 232 undergraduate students, Largo-Wight and colleagues found that overall perceived ability to problem solve was significantly related to perceived stress and perceived health. Specifically, stronger problem-solving abilities, problem-solving confidence, problem-solving personal control, and problem-solving approach were predictors of lower perceived stress and higher perceived health. Social support and

vigorous physical activity also factored in as predictors for lower perceived stress only. Furthermore, perceived stress was included as a significant predictor for health perception, with a lower perception of stress resulting in a higher perception of health. These implications are important given that problem solving is specifically considered a salient strategy in the management and alleviation of stress perceptions, which could lead to the enhancement of wellness.

Perceived Stress in College Athlete Population

As previously noted, college athletes must learn to balance dual roles of academics and their sport responsibilities. Lazarus (2000) stated that competitive sport is seen as stressful by athletes due common stressors such as performance pressures, being consistently evaluated, and the personal investment that athletes make of themselves into their sport. It is therefore understandable that high levels of stress may result. Interestingly however, college athletes have also been shown to perceive sport as a cause of stress (i.e., pressure to win, performance outcomes) (Gan & Anshel, 2009; Kimball & Freysinger, 2003) and a coping mechanism of stress (i.e., venting frustrations of life, teammate support, experience) (Kimball & Freysinger, 2003). Gan and Anshel examined 391 Chinese athletes and the stress they experienced during competition. Of the 391 athletes in this sample, 138 consisted of athletes competing on a university athletics team, while the other 253 were former high school athletes, and current college students who were physical education majors. Using an instrument constructed for the study, based on interviews conducted with ten Chinese athletes, four Chinese coaches, and 2 Chinese sport psychology experts. Results revealed that the main source of stress for athletes during competition was verbal abuse from audience members and opponents, followed by bad call by officials, coach dissatisfaction, environmental sources (i.e., bad weather), and being

concerned with opponent performance. It is reasonable to surmise that athletes will often consider factors such as these, not just during the performance, but in the time leading up to it as well. This may cause a heightened level of perceived stress in the days leading up to performance, which may adversely affect the athlete.

Kimball and Freysinger (2003) conducted an interpretive study of stress and college athletes as it relates to their sport participation, and the meaning that collegiate athletes give to their stress experiences in sport via interviews. Results from the analysis indicated that three major forms of stress were noted for athletes: negative stress, positive stress, and coping methods. In the original study, methods included interviewing the athletes during their competitive seasons in order to gain an understanding of their stress perceptions, while at the height of academic and athletic participation of the semester. Main results showed that athletes perceived sport as both their own choice and a controlling force. Athletes discussed how much of their identity was housed in choosing to play sport and accepting the responsibility of being a college student and athlete. Moreover, some athletes displayed a hardy personality by explaining how they view difficult stressors as challenges to overcome. Athletes reported that sport was exciting, taught them lessons of how to handle multiple responsibilities, and it gave them an outlet for stress. However, athletes also indicated that they felt controlled by their sport, which became a significant source of stress for them. The main stress sources reported were controlling coaches, pressure to succeed in both school and sport, and gender stereotyping (i.e., female athletes being seen as “too masculine”, sexuality stereotype by sport).

Understanding the different stressors for college athletes is of primal importance, given that research has also indicated the effects of stress on injury occurrence. One line of research that has been of particular interest into stress and college athletes is the impact of perceived

stress on the likelihood of incurring a sport injury.

Stress Predicting Athletic Injury. Research dictates that psychological stress (i.e., anxiety, worry, negative thoughts) can manifest itself in physical forms such as increased arousal, muscle tension, decreased visual awareness, and loss of coordination (Nideffer, 1983), with these manifestations of stress causing an increased likelihood of injury in sport (Petrie, 1993; Williams, Tonymon, & Wadsworth, 1986). Over the years, sport psychology researchers have been specifically interested in the causal link between perceived life-event stress perceptions and the physical wellness (i.e., injury) of athletes. Andersen and Williams (1988) created a theoretical model to describe specific antecedents to sport injury, called the Stress-Injury Model. Perceived stress was considered the pinnacle of what would influence injury occurrence in athletes. It was hypothesized that history of stressors (i.e., life stress, daily hassles), personality characteristics that may influence how one perceives stress (state/trait anxiety), and coping resources (i.e., social support) one uses to manage stress would lead to an overall appraisal of a stressful situation (Anderson & Williams, 1988). Moreover, when an athlete with a high history of stressors, personality characteristics that tend to exacerbate stress, and low coping resources encountered a stressful situation, the athlete would appraise it as even more stressful, which would in turn lead to greater physical manifestations (i.e., muscle tension, loss of coordination) and lead to injury (Williams & Andersen, 1998).

Many illustrations of the theoretical relationship between stress and injury proposed in the Stress-Injury Model (Andersen & Williams, 1988) have been found in research. For example, Patterson, Smith, Everett, and Ptacek (1998) assessed the influence of life stress on injury rates in 46 professional ballet dancers. The athletes completed a measure for life stress and social support 11 weeks into the competitive season, with the authors claiming that this had given the

dancers sufficient time to experience stress and engage in social support with other dancers. Results revealed that 28 dancers incurred an injury during the dancing season. More importantly, dancers who reported higher levels of negative life stress were more likely to get injured. Additionally, social support significantly moderated the relationship between negative life stress and injury. That is, dancers who reported higher social support, negative life stress did not predict injury. Conversely, dancers with low social support were more likely to incur injury as a result of negative life stress.

Given the number of responsibilities that college athletes must maintain both as a student and as an athlete (Hudd et al., 2000), it would seem evident that perceived stress, and the relationship to injury proposed by Andersen and Williams (1988), are important factors for athlete health. Hanson, McCullagh, and Tonymon (1992) studied the stress-injury relationship in a sample of 181 collegiate athletes, measuring life stress, anxiety, social support, and coping. Athletes completed the questionnaires during a pre-season meeting, and all injury data during the season were obtained from team athletic trainers. It is important to note that 99 of the 181 athletes had incurred a previous injury during their athletic career. Furthermore, 31 athletes reported that they were still not fully recovered from injuries sustained during the previous season. Approximately 120 athletes incurred injury during the current season the study was conducted. The authors separated athletes into three groups based on injury (i.e., non-injured, minor to moderate injury, and severe injury) and severity (i.e., no injured, one injury, and more than two injuries). Results indicated that negative life stress was shown to significantly predict injury severity. More specifically, the higher negative life stress perceived by the athlete, the more likely the athlete would incur a severe injury. Positive life stress significantly predicted injury occurrence such that, the more positive life stress an athlete had, the more likely they were

to get injured. Moreover, anxiety was shown to have a positive relationship with injury severity, and social support acted as a significant moderator to injury severity.

Petrie (1993) examined effects of life stress, coping, anxiety, and playing status in 158 Division I collegiate football players. Athletes filled out questionnaires prior to the season beginning, and data on injury occurrence was obtained from the medical staff once the season had concluded. Injury was defined as having missed at least one day of participation due to injury sustained in sport. Results indicate that life stress can be predictive of athletic injury. Interestingly however, positive life stress predicted time-loss but not negative life stress, which was in contrast to the findings by Patterson et al. (1998). Additionally, significant results emerged for competitive trait anxiety moderating the effects of positive life stress. Specifically, for starting players, higher levels of anxiety from positive life stress were associated with more time-loss, Petrie describes that positive events such as receiving an athletic scholarship or being a starter (i.e., increased role responsibility) can be initially viewed by an athlete as positive, but later can cause higher stress and anxiety levels due to factors like performance pressure. Therefore, regardless of the event being regarded as positive, the effects of stress still carry a negative impact. Limitations to this study included only examining football players, which also by virtue is all male. It will be useful to examine athletes from all sports, which will also include both sexes, for a more complete picture of life stress effects in college athletes.

Sibold and Zizzi (2012) studied the influence of psychosocial variables (i.e., trait anxiety, life stress) and orthopaedic health (i.e., injury history, muscle/joint flexibility, muscle/joint stability) on injury in 177 Division II collegiate athletes. Of the sample, 125 athletes reported an injury that required at least one day missed from sport participation. Utilizing special statistical analyses called a Hurdle Regression Analysis, factors including number of previous injuries,

concentration disruption, worry, and negative life-event stress predicted days until first injury. Specifically, the more previous injuries and higher concentration disruption, the fewer days there were until incurring injury. Conversely, higher worry and negative life-event stress was predictive of more days till incurring an injury. The authors suggest that higher worry may have been related to lower risk taking and less aggressive play behavior for athletes. Moreover, the athletes may have buffered their negative life-event stress with coping mechanisms like social support, which increased the amount of days until injury. Even with the atypical positive relationship of worry and negative life-event stress and days to injury, the authors contend that there still exists an important relationship for worry and negative life-event stress in the prediction of athletic injuries.

As previously stated, the Stress-Injury Model (Anderson & Williams, 1988) deems perceived stress as a central tenet to injury occurrence in athletes. It is clear that stress is a psychological component that can lead to negative physical repercussions such as injury. However, once the injury occurs, the injury experience itself often causes athletes to suffer higher stress and emotional disturbance (Evans & Hardy, 1995; Tracey, 2003), and lowered life satisfaction (Malinauskas, 2010; Warren, Wrigley, Yoels, & Fine, 1996).

Stress in Response to Athletic Injury. Leddy, Lambert and Ogles (1994) examined the psychological impact of injury in a sample of 343 male athletes from a Division I university. Multiple assessments were used to categorize emotional response including depression, state/trait anxiety, and self-esteem. Using a pre- and post-test design, athletes were asked to complete the battery of tests as part of preseason screening. It is important to note that 30 athletes were already injured during pretest and were not included in the final results. During the course of the competitive seasons, 145 athletes became injured. Once an injury occurred, athletes were

examined with the same battery of tests within one week, and again at 2 months post-injury. Injured athletes were also matched with a non-injured control that was asked to complete the tests at the same time intervals. Results revealed that injured athletes showed higher depression and anxiety, and lower self-esteem scores when compared to non-injured athletes both at immediate post-injury assessment and at 2 months. Moreover, several athletes reported levels of psychological disturbance (i.e., depression, stress/anxiety) that would warrant a treatment intervention by a mental health professional. The authors contend that given the nature of athletic competition at the collegiate level, incurring a sport injury may have an increasingly deleterious psychological effect on some athletes. Therefore, the need for treatment by a mental health professional would be useful to help the athlete manage psychological stress, and not return to play until both physically and psychologically ready.

Tracey (2003) conducted semi-structured interviews with 10 college athletes who had suffered moderate to severe injuries. Interviews were conducted at injury onset, one week and three weeks post-injury. Tracey reported multiple themes emerging from the interviews such as emotional fluctuation, feelings of loss, decreased self-esteem, anxiety, frustration, and anger. Athletes reported multiple factors as being stressful for them. For example, athletes initially appreciated the assistance they were receiving from others such as having doors opened or having their things carried to class. However, the novelty of these actions shortly wore off and athletes reported that the assistance started to induce feelings of frustration. Other stressors reported were missing practice, loss of fitness, and worrying about how long they would be out of competition for. Additionally, a select number of athletes reported that having to attend practice while injured had an increasingly negative effect on their emotional well-being. While Tracey's study was able to highlight athlete stress response to injury, the current study looks to

investigate athletes who are both healthy and injured. Furthermore, to focus attention on the perceived stress of college athletes and its interrelationship with perceived wellness, not just while injured.

The relationship of perceived stress and injury, in addition to the stress response that athletes may have when becoming injured carry many important implications. When considering the health and wellness of athletes, it is important to understand the cause and effect of perceived stress, and to teach athletes mechanisms in which to properly manage their stress. While previous studies have examined what has athletes perceive as causing stress, what effects stress has on athlete health in terms of injury, research is lacking on the extent to which perceived stress affects global wellness perception in college athletes. In other words, to what extent is stress affecting athlete perceptions of their wellness in all domains is of primary importance. The current study will attempt to highlight any potential relationships that may exist, thus aiding further researchers into proper coping mechanisms for the specific domains of wellness that are most affected. Additionally, many of the studies listed above had small sample sizes, whereas the current study will attempt a much larger and more diverse sample size from a major Division I institution. Moreover, many of the studies listed above failed to examine various independent variables that may affect perceived stress such as credit hours enrolled in, number of hours devoted to sport (and work for non-athlete undergraduate students), and scholarship status. Furthermore, while Misra and colleagues (2000) found differences in stress perceptions among class groups, each year of college carries with it its own challenges, and is useful to continue examining stress in association with perceived wellness differences among class groups.

Introduction to Social Support and Wellness

The concept of social support has emerged as an important construct for the health and well-being in individuals of all ages. Social support is most commonly defined as functions that are performed for an individual under distress by significant others such as family, friends, and other varied individuals (Thoits, 1986). It is generally believed that those who do not have a strong social support network in their lives can be affected negatively due to the lack of social associations with other individuals (Srivastava & Barmola, 2012). According to Vaux (1988), the building blocks of social support involve three main constructs of structure (support network), function (support exchange), and perception (support appraisal). More specifically, structural support describes the context and number of social relationships, while functional support describes the perception of quality of those relationships (i.e., exchanges and appraisals) (Thoits, 1995).

Cohen and Wills (1985) discussed how social support can impact the health and well-being of individuals through a main effect and a buffering effect. The main effect acts as a preventive measure to events that would have a negative impact on one's wellness, meaning that social support will have a positive effect in one's life whether they are under stress or not. Cohen and Wills state that this type of support creates regular positive experiences for an individual, with stability and predictability in daily life situations that could enhance health and well-being. Furthermore, being engaged in a social support network may help avoid many negative situations that would potentially cause physical and psychological imbalance (Cohen & Wills). Meanwhile, the buffering effect occurs when a stressor has been encountered and social support is introduced as a coping response to that stressor. Further stated, social support acts as an intervening

response to downgrade the stress response of an individual, thus reducing the risk of negative health outcomes (Cohen & Wills).

Additionally, from the work of Hardy and Crace (1993) and Hardy, Burke, and Crace (1999), three major categories emerged for specific types of social support including emotional support, informational support, and tangible support. Emotional support involves aspects of listening, emotional comfort, and emotional challenge (i.e., challenge individual to evaluate their feelings). Informational support revolves around reality confirmation, task appreciation for hard work, and task challenge to continue hard work and push through barriers. Tangible support includes material assistance such as gifts or financial assistance, and personal assistance that is categorized as the giving of time or using expertise to help another accomplish tasks. It is believed that if the type of support matches the situation in which it is needed, it can subvert negative effects of stressful situations that would decrease one's wellness (Bianco, 2001; Cohen & Wills, 1985).

Inferences can be made from literature into social support and its positive effects on different aspects of perceived wellness in individuals. For example, Richmond, Ross, and Egeland (2007) examined social support and health perceptions in a large sample of 31,625 Canadian citizens. The sample was taken from a 2001 study that involved Canadian citizens completing the Aboriginal Peoples Survey. Social support was measured based on four categorizations including positive interaction, emotional support, tangible support, and affection/intimacy. Results revealed that approximately 54% of subjects reported thriving health status, with men more likely to report thriving status than women. Social support was shown to be high among many of the respondents, with younger age groups reporting higher social support than older age groups. Women reported higher rates of emotional and affection/intimacy support

when compared to men. Additionally, among women, all social support categories were related to thriving health perceptions even in the face of health maladies. For women specifically, those who reported higher social support were more likely to report thriving health status when compared to women with low social support perception. For men, only emotional support was related to thriving health perceptions, with higher emotional support related to thriving health when compared to men with low emotional support. Interestingly, among women, higher scores on affection/intimacy were related to negative health perceptions. The authors claim that while engaging in affectionate and intimate relationships is an important and worthwhile venture; negative aspects of these relationships can certainly create stressful outcomes that can impact health. While these overall results are generalized to the Canadian population, it does give a clear picture given the large sample size that social support does indeed have significant effects on wellness.

Hale, Hannum, and Espelage (2005) examined social support and its effect on physical health in a sample of 247 college students at a large university in the United States. It is important to note that freshman students represented almost half of the sample. Results revealed stronger social intimacy scores for women when compared to men. Additionally, there was a significant effect for belonging (i.e., part of a social network). Being a part of a social network predicted health perceptions for women, while it predicted physical symptomology for men. In other words, having a stronger sense of belonging with others was related to better health perceptions for women and fewer adverse physical health symptoms for men. Although these results were in a small sample of college students, they are nonetheless important, particularly in this particular population. It will be helpful to use a much larger sample given the number and complex diversity of college students, thus making the results more generalizable and applicable.

The research into social support and college student wellness has reached a critical juncture given the rise of college student reported health issues in recent years, primarily mental health issues (Hefner & Eisenberg, 2009). It is important to understand college student social support patterns, and their effects in the lives of these college students.

Social Support among the College Student Population

Hefner and Eisenberg (2009) examined social support and its relationships with mental health among college students. The sample included 1,378 randomly selected college students at a large university in the United States. Social support was measured as structural and functional support, and was associated with mental health factors (i.e., depression, anxiety, suicidal ideation, eating disorders, and self-injury) to determine any significant relationships. Results revealed that students who reported low social support quality also showed positive signs of depression. The students in the low social support quality group additionally reported higher anxiety and suicidal ideation. Higher scores on social support quality were related to a lower probability of depression, anxiety, suicidal ideation, and eating disorders. The authors also reported that higher social support quality scores were related to lower risk of self-injury, but the numbers did not approach significance. With respect to frequency of contact with social support structures, less contact with family members was associated with a higher rate of suicidal ideation, while less contact with friends was related to higher probability of positive eating disorder symptomology. However, an interesting finding emerged in regards to frequent contact with family. It was reported that more frequent contact with family members was associated with higher risk of eating disorder and self-injury. The authors postulate this could be a case of reverse causality. It is possible the eating disorder or self-injury behavior was already existent, whereby the individual would seek out support from family. The other side would be that the

frequent contact with family was negative in nature, thus producing these destructive behavioral patterns in the individual. It may be useful in the future to explore this specific result, and determine if one or both of these directional hypotheses are valid for more contact with family and higher rate of eating disorder and self-injury behavior.

Ruthig, Haynes, Stupinsky, and Perry (2009) examined perceived academic control, optimism, social support, and mental health (i.e., perceived stress, depression) in a college student sample consisting of 288 freshmen at a large university in the United States. The study was completed in three phases: Phase 1 included students surveyed at beginning of academic year in September, phase 2 consists of students surveyed toward end of academic year in March, and phase 3 involved students surveyed at the end of the academic year in May. With specific focus on social support results, the authors reported that social support was significantly related to mental health. Specifically, students who reported higher social support also reported less stress and depression. These findings were particularly important concerning the population of college freshman. Having a strong social support network during their first year of college can lessen the shock value of the transition to college and many of the hardships that come with that transition.

Chao (2012) examined the use of social support, dysfunctional coping, perceived stress, and psychological well-being in a sample of 459 college students at a large university located in the Midwest United States. It is important to note that a majority of the participants in the study were psychology majors. Results indicated that for social support, higher ratings of social support were associated with higher levels of psychological well-being. Results also showed a significant two-way interaction between stress and social support. The results showed a significant negative relationship with stress and well-being for the students who reported low

social support. Although non-significant, students who reported high social support had lower stress levels. Chao highlighted the importance of emphasizing the deleterious effect that low social support structure can have on college students, particularly in the presence of high stress and demands.

While it seems clear that social support is an important construct for college students, a more pertinent question to the current dissertation is where social support fits into the lives of collegiate athletes. Pinkerton, Hinz, and Barrow (1989) had commented on the importance of college athletes utilizing social support services offered to them given the number of stressors they encounter (i.e., poor performance, social isolation, academic and career issues). Therefore, the next section will focus on social support and the collegiate athlete.

Social Support among the Collegiate Athlete Population

There is no question that social interaction plays a vital role in the daily life of athletes, handling the various demands and stressors of their lives as athletes (Udry, Gould, Bridges, & Tuffey, 1997). Rosenfeld, Richman, and Hardy (1989) researched social support and its relationship to collegiate athlete stress in a sample of 170 Division I university athletes. The social support measure used assessed three types of social support: who provides the athlete with support, what types of support are given, and the perceived amount of support given to the athlete. The authors reported that all athletes perceived a similar amount of support given between all providers, although "other" was the lowest. Moreover, five categories of social support providers emerged including coaches, friends, teammates, parents, and others (i.e., non-parent relative). Coaches were described as providing technical challenge, technical appreciation, and emotional challenge support. This makes sense given it is the coaches primary responsibility to support the athlete in their athletic endeavors, and to be ready for athletic competition both

physically and emotionally. Teammates were also shown to provide technical challenge support, listening support, and social reality support. Teammates represent a relatable source of support for athletes since they are likely to encounter many of the same stressors. Friends were shown to give listening support, social reality, and emotional support. Friendships represent close emotional ties between individuals, and often can provide important aspects of support away from sport.

Parents were rated as giving technical appreciation, emotional, and listening support. This seems to be reasonable since parents are often a source of motivational influence and emotional comfort for athletes. Finally, others were indicated as giving listening and emotional support. As Rosenfeld and colleagues (1989) highlighted, the source "other" may refer to a non-parental relative and as a family member, can be seen as a good source of listening support and emotional availability for athletes. No significant differences were found for social support and stress. Specifically, low stress and high stressed athletes did not differ on any measure of social support. This does not necessarily mean differences do not exist; rather it may be related to this specific sample. Additionally, the small sample size may have statistical influence as well, thus one of the purposes for the current dissertation will aim to connect social support and stress in a larger sample of college athletes.

DeFreese and Smith (2013) examined teammate social support on athlete burnout and self-determination in 235 collegiate athletes from multiple Division I, II, III, and NAIA universities across the United States. Social support was measured as perceived support availability, received support, and satisfaction of support. Results showed that participants had overall moderate to high ratings of all three types of support. Lower support satisfaction was significantly related to higher rates of burnout, reduced accomplishment, and devaluation.

Perceived support availability was also significantly related to burnout. Athletes with higher perceived support availability was related to lower incidence of burnout. Higher perceived support availability and support satisfaction scores were also significantly related to higher self-determined motivation. These results for burnout and social support are particularly important given that the literature has noted burnout being associated with higher anxiety in athletes (Aoyagi, Burke, Joyner, Hardy, et al., 2009). Therefore, social support can be implemented to aid athletes in coping with anxiety and avoiding the adverse effects of anxiety and consequently, burnout.

In a more complex look at social support, Yang, Peek-Asa, Lowe, Heiden, et al. (2010) examined social support patterns of 256 Division I collegiate athletes before and after incurring athletic injury. Baseline surveys (i.e., including source of and satisfaction of social support) were administered during team meetings at the beginning of each sporting season. When athletes incurred an injury, they were contacted 3 months post-injury and asked to rate their social support experience and satisfaction with that support during their recovery process. Of the entire sample, 92 athletes had incurred injury during their seasons, but 23 were removed because their first injury occurred with less than 3 months left in the study. Furthermore, another 27 injured athletes were excluded given their injuries were minor and they returned to play within a few days. Of the final 42 injured athletes, 21 had incurred multiple injuries so only first injury data was reported. All post-injury data was compared to baseline data to determine changes in social support. Baseline measures indicated that the main sources of social support for all athletes were family and friends. Additionally, satisfaction scores for all athletes with friends and family were fairly high. Both male and female athletes reported similar use of family for social support, but females reported higher use of friends support when compared to males. However, female

athletes reported higher satisfaction scores for all sources of support except coaches when compared to males. As for the 42 injured athletes, post-injury scores showed athletes relying more on coaches, athletic trainers, and physicians. This makes sense given that coaches are concerned with the health of their athletes, and athletic trainers and physicians are directly involved in the rehab process for injured athletes. Greater post-injury satisfaction of support was noted for friends, coaches, athletic trainers, and physicians. Interestingly, male athletes reported greater satisfaction from physician post-injury but less satisfaction from family. Additionally, female athletes reported greater satisfaction scores for friends, coaches, and physicians post-injury.

It is important to note these social support patterns Yang et al. (2009) found given what is already known about the beneficial effects of social support for health and well-being (Uchino, 2004). Sport injury obviously can have deleterious effects on an athlete's wellness both physically and psychologically, therefore the increased use and satisfaction of support is a clear indication of the important role that social support plays in athlete wellness. Yang and colleagues' (2010) results of increased satisfaction of support from friends, coaches, athletic trainers, and physicians, but not family, most likely represents collegiate athletes being away from their families. Moreover, coaches and athletic trainers have daily contact with both injured and non-injured athletes. Therefore, it is likely they will be sought out for social support once an injury occurs. Furthermore, physicians become more involved in an athlete's social circle once an injury occurs and thus becomes a greater source of support. It is important to educate these individuals on their roles of support structures for athletes who are both injured and non-injured.

While sport injury is not of primary focus in the current dissertation, the literature on social support and sport injury has seen increases in recent years. As previously stated, sport

injury can have negative effects on the wellness of athletes both physically and psychologically. Social support can play an instrumental role in the health and well-being of athletes during rehabilitation (Gould, Udry, Bridges, & Beck, 1997). For example, Lu and Yawen (2013) examined the subjective well-being and social support in a sample of 224 injured college athletes from Tawain. Data was collected during the rehabilitation treatment of each athlete, and injures ranged from missing less than 1 week (57 athletes), missing 1 to 3 weeks (135 athletes), and missing more than 3 weeks (32 athletes). Results showed that factors of social support and hope were significantly related to subjective well-being during rehabilitation. More specifically, athletes who were rated as having higher social support and hope scores also perceived a greater subjective well-being. The greatest effect of social support on subjective well-being occurred for athletes with low hope. If athletes have low hope perceptions during their recovery from injury, increased social support scores can help to motivate and change their perceptions, thus improving subjective well-being perceptions. One may argue that this sample is only representative of a specific cultural background; it nonetheless shows that social support plays a crucial and functional role in the well-being of athletes, especially when their wellness is being counteracted (i.e., injury).

It is apparent from the given research that perceived wellness, perceived stress, and social support play an important role in the lives of young adults in college, both athletes and non-athletes. Yet, while many researchers have claimed the importance of increasing awareness, particularly for wellness among college athletes, research is still lacking with regards to the number of variables that may influence athlete wellness on differing levels (i.e., physical, psychological, social). College athletes and non-athlete undergraduate students will likely encounter many similar stressors (i.e., time constraints, concern for future, and financial issues)

while navigating their college years. College athletes however, are also subjected to additional stressors that the general college population who are not athletes will not face such as demands of a travel schedule, physical and psychological preparedness for competition, integration into a social network outside of sport, injury, and balancing the demands of sport and education (Brewer, Linder, & Phelps, 1995; Cosh & Tully, 2014; Etzel, Watson, Visek, & Maniar, 2006; McAllister, Motamedi, Hame, Shapiro, et al., 2001; Royal & Rossi, 1993).

Therefore, it is important to continue to examine perceived wellness, in association with perceived stress and social support among collegiate athletes. Examining multiple variables will help researches gain a better understanding, and make stronger inferences into which variables may potentially be causing greater decreases in college athlete wellness. Finally, further insight can be gained into the findings of Simon and Docherty (2014), and whether the decreased wellness in former collegiate athletes was due to a small convenience sample for that particular study, or if there is a growing concern into the stability of college athlete wellness long after college is over.

CHAPTER 3

METHODOLOGY

Purpose

The purpose of the current study was to assess perceived wellness, perceived stress, and social support of male and female collegiate student-athletes and non-athlete students and examine their interrelationships.

Research Design

This study was a one time non-experimental survey. The independent variable was athlete versus non-athlete undergraduate student classification. The variables of sex, class groups, current number of class units enrolled in, number of hours per week devoted to work or sport, scholarship status, and injury history were used as additional independent variables for exploratory purposes. Additionally, non-athlete students were asked to indicate if they currently were participating in recreational or club sports, and how many hours per week were devoted to participating in that sport. Scholarship status referred to athletes who may be on athletic scholarship or non-athlete students who may be on academic scholarship. Participants were asked to indicate if their scholarship is full, partial, or not currently receiving a scholarship. Injury history included any athlete who sustained an injury and meet the following criteria: 1) clinical signs of injury determined by team athletic trainer and/or team physician, and 2) inability of the player to return to practice or game the same day, and 3) missed one or more days of practice or competition (Albright, Powell, & Martindale, 2004). Injury history was based on the classification used by Powell and Barber-Foss (1999) in that athletes will classify a minor injury as an injury requiring 1-7 days missed from practice and/or competition, moderate injury requiring 8-21 days missed, and 22 or more days missed for severe injury. Additionally,

participants were asked if their injuries required surgery, and if so, how many surgeries were required. The dependent variables included each wellness subscale, total perceived stress, and reliance on and satisfaction of social support for 6 individual sources.

Sample Population and Participant Selection

A total of 489 participants (256 student-athletes, 233 non-athlete undergraduate students) were included in the current study. The student-athlete group was comprised of 98 males and 158 females, while the non-athlete undergraduate student group was comprised of 119 males and 114 females. The student-athlete participant pool was largely made up of Caucasian race (n=218, 85.2%), as was the non-athlete participant pool (n=152, 65.2%) (see Table 1). Student-athletes' age ranged from 18-24 (*M*=19.84, *SD*=1.25) and non-athletes' age ranged from 18-38 (*M*=20.28, *SD*=2.19). This included athletes who were currently or about to compete in their final season of eligibility in their collegiate sport. A subset of non-athlete college students at the same institution was used as a comparative sample, and included undergraduate students who were not participating on a varsity athletic team. However, non-athlete students were asked if they were currently participating in a recreational or club sport. Non-athlete undergraduate students were randomly selected from multiple academic colleges, majors, and classes on campus. Participation was voluntary and only individuals who sign an informed consent were asked to complete the surveys. Moreover, participants who were not 18 years of age or older were excluded from the study.

Table 1

Racial Demographics for Student-athletes (n = 256) and Non-athletes (n = 233)

Race	Student-Athletes		Non-Athlete Students	
	n	%	n	%
Caucasian	218	85.2	152	65.2
African-American	16	6.3	26	11.2
Asian	7	2.7	29	12.4
Hispanic-Latin American	4	1.6	8	3.4
American-Indian	0	0.0	2	.9
Two or more races	8	3.1	8	3.4
Prefer not to report	1	.4	4	1.7
Other	2	.8	4	1.7

Instrumentation

The questionnaire was composed of four sections: Demographics, Patient Reported Outcomes Measurement Information System Survey (PROMIS), the Perceived Stress Scale (PSS), and the Social Support Questionnaire (SSQ6)

Demographic Survey. The demographic survey (See Appendix B) was used to assess variables of the participating college student-athletes and non-athlete students. In addition to age and sex, this section also included questions regarding class group, number of units currently enrolled in, number of hours per week devoted to sport for athletes along with number of hours per week devoted to recreational/club sports for non-athlete students, number of hours per week

devoted to work for non-athlete students, scholarship status, and injury history. Injury history involved asking participants to classify how many injuries they have sustained for each injury category (i.e., minor, moderate, severe), how many surgeries were required in each injury category, and the approximate date of their last injury and/or surgery. Moreover, the sample of college students was also asked the same information to indicate their injury history, as it is possible college students incurred injury while participating in college recreational or club sport.

Patient Reported Outcomes Measurement Information System Survey (PROMIS). The PROMISv2.0 survey (See Appendix C) was constructed through the National Institute of Health (NIH) as a psychometric evaluation to determine perceived wellness in multiple populations suffering from health conditions. A large number of expert reviewers were involved in the development process, using knowledge from various wellness instruments already in existence (Cella, Riley, Stone, Rothrock, et al., 2010). There exist multiple item banks therefore multiple PROMIS surveys can be created for specific child and adult populations suffering from chronic conditions (Rothrock, Hays, Spritzer, Yount et al., 2010) or for the general public not suffering from any health ailments. Preliminary items for the PROMIS were administered to large sample populations that represented different disease groups in the United States. The PROMISv2.0 is used for general health assessment and will be the specific form of the PROMIS used in the current study. It is comprised of 29 items rated on a 5-point Likert scale for 28 of the questions, with the 29th question rated on a scale of 0-10 for pain indication. Examples of questions include, “In the past 7 days, I felt worthless”, “In the past 7 days, I am satisfied with my ability to perform my daily routine”, and “In the past 7 days, I have trouble starting things because I am tired”. Wellness scales of the PROMISv2.0 include physical function, bodily pain, sleep disturbance, anxiety, depression, and satisfaction with social roles, and then a single raw

score for pain intensity. Each scale on the instrument has a raw score of 4-20. The raw score is then converted to a standardized T-Score based on norm-based data. A higher T-score represents more of the subscale being measured. For the negative subscales (i.e., Depression), a T-score of 60 is one standard deviation worse than average, whereas a T-score of 40 is one standard deviation better than average. However, for the positively subscales (i.e., Physical Functioning), a T-score of 60 is one standard deviation better than average, while a T-score of 40 is one standard deviation worse than average.

The survey has proven to be a valid and reliable measure that can be used by clinicians and other health related professionals to identify and manage quality of life issues in individuals (Cella et al., 2010; Rothrock et al., 2010). Cella and colleagues examined a total of 11 item banks and a 10-item Global Health Scale, created from a sample of 21,133 respondents including individuals from the general population in the United States, and clinical groups (i.e., individuals suffering from a health ailment diagnosed by their physician). In the overall sample of 21,133, 52% of respondents were female and the median age was 50 years old. The authors noted that for the pain scale of the PROMIS, results appeared skewed due to the relatively low numbers reporting moderate to severe pain. Therefore, an additional sample of 967 participants who were at least 21 years old were recruited via the American Chronic Pain Association website, and asked to complete multiple items from the pain interference, pain behavior, and pain quality item banks, and one additional global average pain intensity question. It is important to note that the 967 participants in this additional sample had a self-reported chronic pain condition for at least 3 months prior to participating in the study.

Cella and colleagues (2010) reported that items for each subscale on the PROMIS were shown to correlate well with items of other health and wellness questionnaires. The physical

function scale has shown correlations of -.80 and -.88 with the Health Assessment Questionnaire and the Short Form-36 Health Survey respectively. Items for the fatigue scale on the PROMIS had correlations of .95 with the Chronic Illness Therapy Fatigue Scale and .89 with the vitality measure on the Short Form-36 Health Survey. Pain subscale items correlated at .81 with the Brief Pain Inventory for severity and .85 with the Brief Pain Inventory interference. Furthermore, pain items also correlated at -.86 with the pain scale on the Short Form-36 Health Survey. Sleep disturbance items of the PROMIS showed correlations with items on the Pittsburgh Sleep Quality index (.85) and the Epworth Sleepiness scale (.25) For sleep-related disturbance items, correlations with the Pittsburgh Sleep Quality index and the Epworth Sleepiness scale were shown to be .70 and .45 respectively. The anxiety and depression items correlated well. Anxiety correlated at .80 with the Mood and Anxiety Symptom Questionnaire and depression correlated at .83 with the Center for Epidemiological Studies-Depression Scale. Items on the PROMIS related to social well-being, items correlated at .57 to .59 with social wellness items on the Short Form-36 Health Survey, and .76 on the FACIT-Functional Well-Being Scale. The PROMIS allows for a wide array of participants to report their symptoms, functioning, and wellness perceptions, and is worded so that those with or without health conditions can answer (Cella et al., 2010).

Perceived Stress Scale. The Perceived Stress Scale (PSS) (See Appendix D) was created by Cohen, Kamarck, and Mermelstein (1983) as a quick and reliable way of measuring the perceived stress of general life events. The generality of this survey allows it to be used in a variety of populations (Cohen et al., 1983). The 14-items on the PSS are rated on a 5-point Likert scale, from 0 (never) to 4 (very often). Additionally, respondents are asked to rate their perceptions of stress on each question with a time frame of within the last month. Seven of the

items are considered negatively weighted questions, and the other seven items are positively weighted and are reverse scored. An example of a negative item would be, “In the last month, how often have you been upset because of something that happened unexpectedly?” An example of a positive item would be, “In the last month, how often have you felt that you were on top of things?” The PSS is scored out of a possible 56, with a higher score indicating a higher level of perceived stress. Research has shown the PSS to be both valid and reliable (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). The authors have indicated that the PSS is simply to analyze overall stress perception but no cutoff scores exist to separate between low and high stress. Stress level is interpreted based on scores relative to the maximum score of 56, with higher scores indicating greater levels of stress.

To examine the practical use of the PSS, Cohen et al. (1983) surveyed two samples of college students, one consisting of 332 freshman students, and the other consisting of 114 undergraduate students who were members of an introductory psychology course and completed the questionnaire for course credit. A third sample of 64 individuals participating in a community smoking-cessation program was also included in the study. For test-retest reliability, the PSS was administered to subset of 82 college students on two occasions that were separated by 2 days. In addition, subjects in the smoking cessation sample were retested after 6 weeks. Coefficient alpha reliabilities were reported as .84, .85, and .86 for all three samples. Test-retest correlations were shown to be .85 for the college student group and .55 for the smoking cessation group. Reliability of the PSS has shown ranges of coefficient alphas from .75 (Cohen & Williamson, 1988) to .85 (Cohen et al., 1983). Furthermore, Cohen and colleagues state that the predictive validity of the PSS is best over a period of 4 to 8 weeks. Beyond this point, the predictive

validity will fall due to the ever-changing nature of stress perceptions among individuals (Cohen et al., 1983; Cohen & Williamson, 1988).

The PSS is considered a valuable measurement that unlike other stress measures in existence, takes into account both personal and contextual factors that may influence the intensity and direction of an individual's perception of stress (Roberti, Harrington, & Storch, 2006). It is important to note that the PSS is not designed to assess psychological symptomology, but rather used as a measure to indicate those who may be more at risk for developing psychological issues related to stress perceptions (Cohen et al., 1983). As Roberti and colleagues (2006) state, using the PSS on a college campus as a tool for screening students that may have high perceptions of stress, could lead to valuable interventions of coping and enhancement of problem solving abilities.

Social Support Questionnaire. The 6-item Social Support questionnaire (SSQ6) (Sarason, Sarason, Shearin, & Pierce, 1987) (See Appendix E) is one of the most widely used social support questionnaires in the sport psychology literature. The SSQ6 is a shorter version of the 27-item Social Support Questionnaire, with each of the 6 social support questions containing two parts. The first part measures the number of available sources of support a student-athlete feels he or she can utilize in response to various stressors. The available sources of support will include family, high school friends, college friends, teammates (i.e., Varsity or club sport athletes), health-related professionals (i.e., athletic trainer, doctor, mental health professional), and other. The second part of each question on the SSQ6 assesses the degree to which the athlete perceives a satisfaction with the support they are receiving from each particular source. Using a score of 1 to 6, a score of 1 indicates "very dissatisfied" and a score of 6 indicates "very satisfied".

After creating the SSQ3, Sarason et al. (1987) used the original 27-item SSQ to identify a larger sub-set of items in order to create another short version of the SSQ, but with greater internal reliability than the SSQ3. Using two different samples of undergraduate college students, subjects completed the original SSQ in conjunction with other measures related to personality. The first sample was part of a larger study and consisted of 182 undergraduate students, and they completed the SSQ, SSQ3, and other questionnaires designed to measure social competence, loneliness, and affect. Of these 182 subjects, 106 were retested at a later date to determine test-retest reliability on the SSQ3. The second sample consisted of 217 undergraduate students enrolled in an introductory psychology class. This sample completed the SSQ along with three other social support scales, and multiple questionnaires pertaining to parent-child relationship, social desirability and anxiety, and level of shyness.

A third undergraduate sample of 146 subjects was used to complete the SSQ in addition to other measures of social support, and measures on parent-child relationships, depression, and anxiety. Using a factor analysis with the first two samples, the highest six loadings for number and satisfaction of support were noted and it produced six pairs for sample 1 and seven pairs for sample 2. The average loadings for sample one ranged from .78 to .82. Sample loadings from sample 2 ranged from .76 to .80. A total of six items were taken, three of which were common among the two samples, and another three given their high ranking of commonality between the two samples. The final six items comprised the final version of the SSQ6. The SSQ6 has been shown to correlate well with the original SSQ (Sarason et al., 1987), along with internal reliabilities ranging from .90 to .93 for the number of supporters and satisfaction with support from those individuals. The SSQ6 has further demonstrated excellent internal reliability ranging from .93 to .96 (Sarason, Sarason, & Pierce, 1990).

Data Collection and Management

Approval for the current study was obtained by the Institutional Review Board prior to the start of data collection. The questionnaires were given as a one-time, self-administered survey to be completed via paper-and-pencil version given that the primary investigator conducted onsite data collection. The survey packet consisted of four surveys: Demographic survey, PROMIS, PSS, and the SSQ6. The complete packet consisted of 64 items and took approximately 15 to 20 minutes to complete. The order of the surveys was Demographic, PROMIS, PSS, and SSQ6. Participants were asked to answer all questions, but could skip questions or withdraw from the study at any time. The data collection period was from October 1, 2014 to January 31, 2015. In order to gain access to student-athletes for survey administration, the primary researcher for the current study contacted head or assistant coaches and members of the athletic training staff at the institution being used for the study. If the head coaches and sports medicine staff agreed to allow administration of surveys, student-athletes were asked to sign an informed consent before completing the surveys.

For non-athlete undergraduate students, the primary investigator contacted multiple professors of selected classes in varying academic colleges on campus. If the professor granted permission for entrance into their class, the study was presented to the students. Those who wished to participate signed an informed consent and then filled out the questionnaires. All responses remained anonymous, as no identifying information was asked other than demographic information (i.e., age, sex, height, weight, sport). All data that was obtained was placed in a locked file box in the office of the primary investigator.

Data Analysis

Demographic information and scores from the PROMIS, PSS, and SSQ6 were summarized using descriptive data. Wellness scales of the PROMIS included T-scores for physical function, bodily pain, sleep disturbance, anxiety, depression, and satisfaction with social roles, and a single raw score for pain intensity. The 14-items on the PSS are rated on a 5-point Likert scale, from 0 (never) to 4 (very often), with seven of the items considered negatively weighted, and seven items that are positively weighted and reverse scored. The PSS is scored out of a possible 56, with a higher score indicating a higher level of perceived stress. The total PSS score was used for this study. The SSQ6 measures the number of available sources of support a student-athlete feels he or she can utilize in response to various stressors, and the satisfaction with that support. Scores for sources of support were entered as a "0" for no support received and a "1" for support received from that specific source. With regards to satisfaction of support, participants rated on a scale of 1 to 6, a score of 1 indicates "very dissatisfied" and a score of 6 indicates "very satisfied". Scores were summed for each source of support out of a total 36 (i.e., 6 questions for each source) to yield an overall satisfaction score for each source of social support. After performing a Bonferroni correction, dividing the significance level of .05 by the number of statistical analyses performed, a new significance level was set at $p=<.002$. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) 22.0 software.

CHAPTER 4

RESULTS

The purpose of the current study was to assess perceived wellness, perceived stress, and social support of male and female collegiate student-athletes and non-athlete students and examine their interrelationships. This chapter will include a report of demographic factors, descriptive statistics, and all main findings for each of the hypotheses and exploratory questions.

Demographic Information

A total of 489 participants (256 student-athletes, 233 non-athlete undergraduate students) were included in the current study. The student-athlete group was composed of 21.9% (n=56) Freshman, followed by Sophomores (25.8%, n=66), Juniors (28.5%, n=73), Seniors (19.1%, n=49), and 5th year Seniors (4.7%, n=12). For the non-athlete group, 24% (n=56) were Freshman, followed by Sophomores (21%, n=49), Juniors (24%, n=56), Seniors (18.9%, n=44), 5th year Seniors (9.9%, n=23) and 6th year Seniors (.9%, n=2). Out of all the student-athletes in the athlete group, 42.6% (n=109) were on a partial athletic scholarship, followed by no scholarship (n=85, 33.2%), and full athletic scholarship (n=37, 14.5%). For the non-athlete group, 71.2%, (n=166) reported having no scholarship, followed by partial academic scholarship (n=52, 22.3%), and full academic scholarship (n=7, 3.0%) (see Table 2). For the non-athlete group, 38.6% (n=90) reported participating in intramural or club sports while 60.5% (n=141) reported that they did not participate in club or intramural sports.

Table 2

Scholarship Status for Student-athletes (n = 255) and Non-athletes (n = 225)

Scholarship	Student-Athletes		Non-Athlete Students	
	n	%	n	%
Full Athletic	37	14.5	0	0.0
Partial Athletic	109	42.6	0	0.0
No Scholarship	85	33.2	166	71.2
Full Academic	1	.4	7	3.0
Partial Academic	11	4.3	52	22.3
Partial Athletic/Academic	11	4.3	0	0.0
Full Athletic/Academic	1	.4	0	0.0

With regard to sport, 14.1% were from baseball (n=36), with the remaining student-athletes being largely represented by women's soccer (n=34, 13.3%), cheerleading (n=30, 11.7%), dance (n=27, 10.5%), and men's soccer (n=22, 8.5%). However, 16 different sports were represented in the final sample (see Table 3).

Table 3

Demographic Data by Sport for Student-athletes (n = 256)

Team	n	%
Baseball	36	14.1
Women's Soccer	34	13.3
Cheer	30	11.7
Dance	27	10.5
Men's Soccer	22	8.5
Swimming and Diving	20	7.8
Softball	18	7.0
Track and Field	16	6.2
Women's Gymnastics	14	5.5
Women's Rowing	12	4.7
Women's Field Hockey	10	3.9
Men's Tennis	9	3.5
Wrestling	6	2.3
Women's Volleyball	1	.3
Men's Ice Hockey	1	.3

Additionally, after a series of T-tests, results showed there was a significant difference between groups for sport hours t(475)=.174, p=<.001, with the student-athlete group spending between 8 and 40 hours devoted to their sport each week (*M*=18.47, *SD*=5.64), and the non-athlete group spending between 0 and 20 hours per week devoted to intramural or club sport activities (*M*=3.44, *SD*=4.51). There was also a significant difference between groups in work

hours t(340)=7.68, p=<.001, with the student-athlete group working between 0 and 50 hours per week (*M*=1.82, *SD*=5.55) and the non-athlete group reporting between 0 and 40 hours per week devoted to work (*M*=7.69, *SD*=10.27). There was no significant difference between groups for school credits t(459)=.605, p=.545, with the student-athlete group reporting between 1 and 18 academic credits (*M*=13.11, *SD*=1.76) during the semester in which data was collected, and the non-athlete group reporting between 6 and 22 academic credits (*M*=13.21, *SD*=2.05). Finally, the largest represented college major was Kinesiology for both the athlete group (n=48) and non-athlete group (n=68). Finally, with regards to sport injury, both the student-athlete and non-athlete groups reported a mean of less than 1 injury and surgery per individual for each classification of injury and surgery (see Table 4). Women's Soccer reported the most overall team injuries with 46, followed by Baseball (n=39) and Cheer (n=37) (see Table 5).

Table 4

Means and Standard Deviations for Sport Injury and Surgery for Student-athletes (n = 256) and Non-athletes (n = 228)

Injury/Surgery	Student-Athletes		Non-Athletes	
	M	*SD*	*M*	*SD*
Minor Injury	.757	1.40	.373	1.13
Moderate Injury	.339	.690	.105	.417
Major Injury	.351	.639	.118	.615
Minor Surgery	.007	.125	.017	.186
Moderate Surgery	.023	.151	.008	.093
Major Surgery	.195	.501	.048	.378

Table 5

Injury Data by Sport for Student-athletes (n = 256)

Team	Total Injuries
Women's Soccer	46
Baseball	39
Cheer	37
Men's Soccer	34
Swimming and Diving	34
Women's Gymnastics	32
Wrestling	29
Track and Field	27
Softball	23
Women's Field Hockey	17
Men's Tennis	16
Women's Rowing	15
Dance	14
Women's Volleyball	2
Men's Ice Hockey	1

Descriptive Statistics

A series of Pearson Correlations were conducted for perceived wellness to determine inter-correlations among the eight wellness subscales for student-athletes (see Table 6) and non-athletes (see Table 7). Results revealed low to moderate correlations between all subscales for both the student-athlete and non-athlete groups on perceived wellness variables and each source

of social support. The highest correlation was between Pain Interference and Pain Intensity for both student-athletes r=.72, p<.001 and non-athletes r=.69, p<.001.

Table 6

R-Values for Correlations Among Perceived Wellness Subscales for Student-athletes (n = 256)

Measure	PF	ANX	DEP	FAT	SLEEP	SF	PI	PInten
PF		-.305*	-.209*	-.267*	-.109	.303*	-.418*	-.341*
ANX			.628*	.482*	.343*	-.453*	.395*	.408*
DEP				.471*	.314*	-.377*	.293*	.301*
FAT					.416*	-.488*	.430*	.470*
SLEEP						-.279*	.316*	.324*
SF							-.352*	-.298*
PI								.725*
PInten								

PF= Physical Functioning, ANX=Anxiety, DEP=Depression, FAT = Fatigue, SLEEP = Sleep Disturbance, SF= Social Functioning, PI= Pain Interference, PInten= Pain Intensity
Note. *p<.002

Table 7

R-Values for Correlations Among Perceived Wellness Subscales for Non-athletes (n = 233)

Measure	PF	ANX	DEP	FAT	SLEEP	SF	PI	PInten
PF		.002	-.069	-.056	-.087	.157	-.437*	-.388*
ANX			.603*	.446*	.305*	-.361*	.032	.156
DEP				.411*	.298*	-.425*	.178	.250**
FAT					.345*	-.430*	.180	.290**
SLEEP						-.218*	.101	.255*
SF							-.155	-.242*
PI								.691*
PInten								

PF= Physical Functioning, ANX=Anxiety, DEP=Depression, FAT = Fatigue, SLEEP = Sleep Disturbance, SF= Social Functioning, PI= Pain Interference, PInten= Pain Intensity
Note. *p<.002

Additionally, a series of Pearson Correlations were conducted for social support reliance (see Table 8), satisfaction of support (see Table 9), and between social support reliance and satisfaction (see Table 10) for the student-athlete group. Likewise, the same analyses were conducted for the non-athlete group (see Table 11-13). Results showed low to moderate correlations for all social support variables among the student-athlete and non-athlete groups.

Table 8

R-Values for Correlation Among Social Support Reliance for Student-athletes (n = 255)

Measure	Family	High School Friends	College Friends	Teammates	Health-Related Professionals
Family		.522*	.391*	.074	.386*
High School Friends			.605*	.526*	.668*
College Friends				.650*	.592*
Teammates					.614*
Health-Related Professionals					

Note. *p<.002

Table 9

R- Values for Correlation Among Social Support Satisfaction for Student-athletes (n = 255)

Measure	Family	High School Friends	College Friends	Teammates	Health-Related Professionals
Family		.125	.116	.079	.104
High School Friends			.231*	.064	.141
College Friends				.479*	.217*
Teammates					.176
Health-Related Professionals					

Note. *p<.002

Table 10

R-Values for Correlation Between Social Support Reliance and Satisfaction for Student-athletes (n = 255)

Measure	Family Satisfaction	High School Friends Satisfaction	College Friends Satisfaction	Teammates Satisfaction	Health-Related Professionals Satisfaction
Family Reliance	.231*	.054	-.022	-.033	-.040
High School Friends Reliance	.104	.064	-.021	-.009	-.037
College Friends Reliance	.000	-.076	-.014	-.060	-.105
Teammates Reliance	-.004	-.021	-.013	-.002	-.029
Health-Related Professionals Reliance	.019	.002	-.035	.017	.049

Note. *p<.002

Table 11

R-Values for Correlation Among Social Support Reliance for Non-athletes (n = 231)

Measure	Family	High School Friends	College Friends	Teammates	Health-Related Professionals
Family		.296*	.193	.206	.392*
High School Friends			.433*	.379*	.426*
College Friends				.541*	.459*
Teammates					.745*
Health-Related Professionals					

Note. *p<.002

Table 12

R-Values for Correlation Among Social Support Satisfaction for Non-athletes (n = 231)

Measure	Family	High School Friends	College Friends	Teammates	Health-Related Professionals
Family		.247*	.248*	.034	.176
High School Friends			.319*	.207	.244*
College Friends				.381*	.319*
Teammates					.604*
Health-Related Professionals					

Note. *p<.002

Table 13

R-Values for Correlation Between Social Support Reliance and Satisfaction for Non-athletes (n = 231)

Measure	Family Satisfaction	High School Friends Satisfaction	College Friends Satisfaction	Teammates Satisfaction	Health-Related Professionals Satisfaction
Family Reliance	.031	-.029	-.043	-.129	.105
High School Friends Reliance	.003	.117	-.009	-.117	-.001
College Friends Reliance	-.043	-.089	.045	-.129	-.032
Teammates Reliance	-.128	-.088	-.006	-.056	.017
Health-Related Professionals Reliance	-.013	-.088	-.118	-.136	-.064

Note. *p<.002

Further discriminant analyses were conducted to determine the demographic representation of perceived wellness and perceived stress in both student-athlete and non-athlete groups. For perceived wellness, the PROMISv2.0 is rated using standardized T-Scores. T-Scores are based on norm-based data, and a T-Score of 50 with a standard deviation of 10 indicates the average wellness score in the general population for that particular scale. Therefore, a higher T-score represents more of the subscale being measured. For the negative subscales (i.e., Depression), a T-score of 60 is one standard deviation worse than average, whereas a T-score of 40 is one standard deviation better than average. However, for the positively subscales (i.e., Physical Functioning), a T-score of 60 is one standard deviation better than average, while a T-score of 40 is one standard deviation worse than average. The current study showed that when

compared to the average population, a low number of student-athletes approached clinical significance, which would imply that the student-athlete group was overall considered "well".

For the positive scales of Physical Functioning and Social Functioning, only 1.6% (n=4) and 8.2% (n=21) of student-athletes reported a T-Score lower than 40, respectively. This would indicate that student-athletes were physically and socially well. For the negative scales, Anxiety showed that 27.0% (n=69) reported T-Scores of 60 or higher, along with Depression (n=23, 8.9%) for, Fatigue (n=82, 32.0%), Sleep Disturbance (n=26, 10.1%), and Pain Interference (n=24, 9.4%). The Pain Intensity scale was rated from 0-10, with higher scores indicating greater pain. Only 12.5% (n=32) of student-athletes reported a pain score of higher than 5. These data would suggest overall that student-athlete population in the current study is considered "well".

For the non-athlete group, the positive scales of Physical Functioning and Social Functioning showed only 1.6% (n=4) and .8%% (n=2) of non-athletes reported a T-Score lower than 40, respectively. This would indicate that non-athletes were physical and socially well. For the negative scales, Anxiety showed that only 17.6% (n=41) reported T-Scores of 60 or higher, along with Depression (n=21, 9.0%), Fatigue (n=39, 16.7%), Sleep Disturbance (n=25, 10.7 %), and Pain Interference (n=6, 2.6%). The Pain Intensity scale was rated from 0-10, with higher scores indicating greater pain. Only 6.0% (n=14) of non-athletes reported a pain score of higher than 5. These data would suggest overall that the non-athlete population in the current study is also considered "well".

With regards to perceived stress, the PSS is scored out of a possible 56, with a higher score indicating a higher level of perceived stress. For the student-athlete group, 4.7% (n=12) indicated a stress score of 40 or higher, with the highest score at 47 (n=1). The non-athlete group reported only 1.7% (n=4) of participants with a stress score of 40 or above, with the highest

score at 43 (n=2). These data would indicate that overall, both the student-athlete and non-athlete groups would be considered low to moderate stress.

Evaluation of Hypotheses

H1: College student-athletes will have lower perceived wellness than non-athlete undergraduate students.

To examine hypothesis 1, a MANOVA was conducted to determine if college student-athletes would have lower perceived wellness than non-athlete undergraduate students. Results revealed a significant difference on perceived wellness based on group (athlete vs. non-athlete) ($F_{(8, 479)} = 9.33$, $p = < .001$; Wilk's $\Lambda = 0.865$, partial $\eta^2 = .14$). Specifically, the student-athlete group had lower perceptions of wellness compared to non-student athletes on Physical Functioning ($F_{(1, 486)} = 14.38$; $p = < .001$; partial $\eta^2 = .03$), Fatigue ($F_{(1, 486)} = 30.99$; $p = < .001$; partial $\eta^2 = .06$), Social Functioning, ($F_{(1, 486)} = 33.58$; $p = < .001$; partial $\eta^2 = .06$), Pain Interference ($F_{(1, 486)} = 19.74$; $p = < .001$; partial $\eta^2 = .04$), and Pain Intensity ($F_{(1, 486)} = 32.44$; $p = < .001$; partial $\eta^2 = .06$) (see Table 14). There were no significant differences between groups for Anxiety ($F_{(1, 486)} = 2.57$; $p = .109$; partial $\eta^2 = .005$), Depression ($F_{(1, 486)} = .270$; $p = .603$; partial $\eta^2 = .001$), and Sleep Disturbance ($F_{(1, 486)} = .068$; $p = .795$; partial $\eta^2 = .00$). Therefore, the hypothesis that student-athletes will have lower perceived wellness compared to non-athlete undergraduate students was partially supported.

Table 14

Means and Standard Deviations for Wellness Subscales (T-scores) for Student-athletes (n = 255) and Non-athletes (n = 233)

Wellness Subscale	Student-Athletes		Non-Athletes	
	M	*SD*	*M*	*SD*
Physical Functioning	53.88	5.31	55.53	4.12
Anxiety	54.18	9.72	52.83	8.77
Depression	48.23	8.38	47.85	8.13
Fatigue	55.46	9.58	50.77	8.98
Sleep Disturbance	51.29	7.13	51.12	7.21
Social Functioning	52.08	9.01	56.50	7.71
Pain Interference	48.81	8.03	45.88	6.29
Pain Intensity	2.60	2.07	1.57	1.86

H2: College student-athletes will have higher perceived stress than non-athlete undergraduate students.

Hypothesis 2 examined whether student-athletes would have a higher perception of stress when compared to their non-athlete counterparts. An ANOVA was performed and revealed no significant difference on perceived stress between student-athletes and non-athletes ($F_{(1, 487)} = 1.54$, $p = .215$). Mean results showed student-athletes (M=25.34, SD=7.96) to be slightly higher than non-athletes (M=24.49, SD=7.09) on their perceived stress, but were not statistically different from one another. Therefore, the hypothesis that student-athletes will have higher stress than non-athletes was not supported.

H3: Higher levels of perceived stress will result in lower perceptions of wellness in college athletes and non–athlete undergraduate students.

A series of linear regressions were performed to determine if perceived stress was a significant predictor of perceived wellness in the student-athlete and non-athlete groups. For the student-athlete group, increased perceived stress was significantly associated with increases in Anxiety (β=.697, *p*=<.001), Depression (β =.617, *p*=<.001), Fatigue (β =.635, *p*=<.001), Sleep Disturbance (β =.373, *p*=<.001), Pain Interference (β =.383, *p*=<.001), and Pain Intensity (β =.112, *p*=<.001). Conversely, increases in perceived stress were significantly associated with a decreases in Social Functioning (β =-.442, *p*=<.001). No significant differences existed for Physical Functioning (β =-.111, *p*=.008) (see Table 15).

For the non-athlete group, increased perceived stress was significantly associated with increases in Anxiety (β=.498, *p*=<.001), Depression (β =.557, *p*=<.001), Fatigue (β =.407, *p*=<.001), Sleep Disturbance (β =.428, *p*=<.001), and Pain Intensity (β =.055, *p*=.001). Increase in perceived stress was also significantly associated with a decrease in Social Functioning (β =-.406, *p*=<.001). There were no significant differences in the Physical Functioning (R^2=.009, $F_{(1, 231)}$=2.17, *p*=.142) or Pain Interference (R^2=.003, $F_{(1, 231)}$=.678, *p*=.411) in the non-athlete group (see Table 16). For the student-athlete group, the hypothesis was supported that higher perceived stress resulted in lower (i.e., worse) perceptions of perceived wellness, and it was partially supported for the non-athlete group.

Table 15

Regression Model for Perceived Stress and Wellness in Student-athletes (n = 255)

Outcomes	Predictor	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Stress	-.111	.041	-.167	-2.68	.008
Anxiety[b]	Stress	.697	.063	.572	11.08	<.001*
Depression[c]	Stress	.617	.054	.586	11.52	<.001*
Fatigue[d]	Stress	.635	.064	.528	9.90	<.001*
Sleep Disturbance[e]	Stress	.373	.051	.417	7.31	<.001*
Social Functioning[f]	Stress	-.442	.065	-.391	-6.77	<.001*
Pain Interference[g]	Stress	.383	.059	.380	6.54	<.001*
Pain Intensity[h]	Stress	.112	.015	.433	7.64	<.001*

[a]- $F_{(1, 253)}$= 7.23, p=.008, R= .167, R^2= .028; [b]- $F_{(1, 253)}$= 122.83, p=<.001, R= .572, R^2= .327; [c]- $F_{(1, 254)}$= 132.72, p=<.001, R= .586, R^2= . 343; [d]- $F_{(1, 254)}$= 98.00, p=<.001, R= .528, R^2= .278; [e]- $F_{(1, 254)}$= 53.44, p=<.001, R= .417, R^2= .174; [f]- $F_{(1, 254)}$= 45.83, p=<.001, R= .391, R^2= .153; [g]- $F_{(1, 254)}$= 42.75, p=<.001, R= .380, R^2= .144; [h]- $F_{(1, 254)}$= 58.51, p=<.001, R= .433, R^2= .187
*p<.002

Table 16

Regression Model for Perceived Stress and Wellness in Non-athletes (n = 233)

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Stress	-.056	.038	-.096	-1.47	.142
Anxiety[b]	Stress	.498	.075	.402	6.68	<.001*
Depression[c]	Stress	.557	.079	.486	8.44	<.001*
Fatigue[d]	Stress	.407	.064	.321	5.15	<.001*
Sleep Disturbance[e]	Stress	.428	.061	.420	7.04	<.001*
Social Functioning[f]	Stress	-.406	.066	-.373	-6.10	<.001*
Pain Interference[g]	Stress	.048	.058	.054	.823	.411
Pain Intensity[h]	Stress	.055	.017	.208	3.23	.001*

[a]- $F_{(1, 231)}$= 2.17, p= .142, R= .096, R^2= .009; [b]- $F_{(1, 231)}$= 44.63, p=<.001, R= .402, R^2= .162; [c]- $F_{(1, 231)}$= 71.34, p=<.001, R= .486, R^2= . 236; [d]- $F_{(1, 231)}$= 26.57, p=<.001, R= .321, R^2= .103; [e]- $F_{(1, 231)}$= 49.58, p=<.001, R= .420, R^2= .177; [f]- $F_{(1, 231)}$= 37.23, p=<.001, R= .373, R^2= .139; [g]- $F_{(1, 231)}$= .678, p=.411, R= .054, R^2= .003; [h]- $F_{(1, 231)}$= 10.41, p= .001, R= .208, R^2= .043
*p<.002

H4: Higher social support satisfaction will result in lower perceived stress in college athletes and non-athlete undergraduate students.

A linear multiple regression was performed for hypothesis 4 to determine if there would be a relationship between social support satisfaction for each individual source of support and perceived stress in student-athletes and non-athlete undergraduate students. Results for the student-athlete group revealed that satisfaction of support from family was the only significant predictor of perceived stress (R^2=.129, $F_{(5, 228)}$=6.76, p=<.001). As satisfaction for family (β =-

.3.37, *p*=<.001) increased, perceived stress decreased. The beta weight indicates a moderate effect of family satisfaction and stress. There were no significant differences found for satisfaction from high school friends (β =-.049, *p*=.880), college friends (β =-.852, *p*=.115) teammates (β =-.844, *p*=.122), and health-related professionals (β =-.236, *p*=.482). For the non-athlete group, results revealed that satisfaction of support was not a significant predictor of perceived stress (R^2=.054, $F_{(5, 157)}$=1.79, *p*=.117). Therefore, the hypothesis that higher social support satisfaction would result in lower perceived stress was partially supported for the student-athlete group, but was not supported for the non-athlete group.

H5: Higher social support satisfaction will result in higher perceptions of wellness in college athletes and non-athlete undergraduate students.

Hypothesis 5 aimed to examine if higher social support satisfaction would result in higher perceptions of wellness in student-athlete and non-athlete groups. A series of linear multiple regressions were performed and results for the student-athlete group revealed satisfaction of support significantly predicted Anxiety (R^2=.093, $F_{(5, 227)}$=4.66, *p*=<.001) and Depression (R^2=.155, $F_{(5, 228)}$=8.38, *p*=<.001) (see Table 17).

Specifically, satisfaction from family resulted in lower Anxiety (β =-3.02, *p*=.004). Satisfaction from family (β =-3.75, *p*=<.001) and satisfaction from college friends (β =-1.75, *p*=.002) resulted in lower Depression. The highest variance reported was 15.5% for Depression, followed by 9.3% for Anxiety. No significant results were found for Physical Functioning (R^2= .053, $F_{(5, 227)}$=2.56, *p*= .028), Fatigue (R^2=.075, $F_{(5, 228)}$=3.67, *p*=.003) Sleep Disturbance (R^2=.047, $F_{(5, 228)}$=2.26, *p*=.05), Social Functioning (R^2= .071, $F_{(5, 228)}$= 3.47, *p*=.005), Pain Interference (R^2=.040, $F_{(5, 228)}$=1.89, *p*=.096), or Pain Intensity (R^2=.046, $F_{(5, 228)}$=2.19, *p*=.055).

Results for the non-athlete group revealed that satisfaction of support did not significantly predict any dimension of perceived wellness (see Table 18). The hypothesis was therefore partially supported for student-athletes, given that social support satisfaction predicted higher Physical and Social Functioning, in conjunction with lower Anxiety, Depression, and Fatigue. Conversely, the hypothesis was not supported for non-athletes due to social support satisfaction not significantly predicting outcomes on any of the perceived wellness scales.

Table 17

Regression Model for Satisfaction of Support and Wellness in Student-athletes (n = 233)

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Family	1.53	.563	.178	2.71	.007
	High School Friends	.200	.223	.060	.897	.370
	College Friends	.374	.374	.077	1.00	.318
	Teammates	.226	.379	.044	.597	.551
	Health-Related Professionals	-.098	.233	-.028	-.422	.673
Anxiety[b]	Family	-3.02	1.03	-.187	-2.93	.004*
	High School Friends	-.150	.409	-.024	-.367	.714
	College Friends	-1.11	.686	-.121	-1.61	.108
	Teammates	-1.09	.696	-.114	-1.56	.119
	Health-Related Professionals	-.221	.428	-.034	-.517	.605
Depression[c]	Family	-3.75	.850	-.273	-4.41	<.001*
	High School Friends	.127	.337	.024	.377	.706
	College Friends	-1.75	.567	-.225	-3.09	.002*
	Teammates	-.501	.573	-.062	-.874	.383
	Health-Related Professionals	-.046	.353	-.008	-.132	.895

Table 17 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Fatigue[d]	Family	-3.07	1.02	-.195	-3.01	.003
	High School Friends	-.407	.404	-.067	-1.01	.316
	College Friends	-.253	.680	-.028	-.373	.710
	Teammates	.266	.688	.029	.387	.699
	Health-Related Professionals	-.879	.424	-.137	-2.07	.039
Sleep Disturbance[e]	Family	-1.77	.757	-.153	-2.34	.020
	High School Friends	.289	.300	.065	.963	.337
	College Friends	-.227	.505	-.035	-.449	.654
	Teammates	-.309	.511	-.045	-.605	.546
	Health-Related Professionals	-.504	.315	-.107	-1.60	.110
Social Functioning[f]	Family	2.84	.954	.194	2.98	.003
	High School Friends	-.284	.378	-.050	-.751	.453
	College Friends	-.290	.636	-.035	-.457	.648
	Teammates	1.24	.643	.142	1.92	.056
	Health-Related Professionals	.523	.396	.087	1.32	.188

Table 17 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Pain Interference[g]	Family	-1.96	.878	-.147	-2.23	.026
	High School Friends	-.131	.348	-.026	-.377	.706
	College Friends	-.824	.585	-.109	-1.41	.161
	Teammates	-.102	.592	-.013	-.173	.863
	Health-Related Professionals	.328	.365	.060	.900	.369
Pain Intensity[h]	Family	-.338	.223	-.100	-1.52	.130
	High School Friends	-.005	.088	-.004	-.057	.955
	College Friends	-.307	.148	-.160	-2.06	.040
	Teammates	-.084	.150	-.042	-.561	.575
	Health-Related Professionals	.039	.092	.028	.418	.677

[a]- $F_{(5, 227)}= 2.56$, $p= .028$, $R= .231$, $R^2= .053$; [b]- $F_{(5, 227)}= 4.66$, $p=<.001$, $R= .305$, $R^2= .093$; [c]- $F_{(5, 228)}= 8.38$, $p=<.001$, $R= .394$, $R^2= .155$; [d]- $F_{(5, 228)}= 3.67$, $p=.003$, $R= .273$, $R^2= .075$; [e]- $F_{(5, 228)}= 2.26$, $p=.050$, $R= .217$, $R^2= .047$; [f]- $F_{(5, 228)}= 3.47$, $p=.005$, $R= .266$, $R^2= .071$; [g]- $F_{(5, 228)}=1.89$, $p=.096$, $R= .200$, $R^2= .040$; [h] $F_{(5, 228)}=2.19$, $p=.055$, $R= .214$, $R^2= .046$
*p<.002

Table 18

Regression Model for Satisfaction of Support and Wellness in Non-athletes (n = 163)

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Family	-.021	.450	-.004	2.71	.962
	High School Friends	-.209	.233	-.076	.897	.371
	College Friends	.212	.323	.058	1.00	.513
	Teammates	-.407	.250	-.193	.597	.062
	Health-Related Professionals	.017	.275	-.028	.006	.950
Anxiety[b]	Family	1.82	.884	.168	-2.06	.041
	High School Friends	-.472	.457	-.087	-1.03	.303
	College Friends	.135	.635	.019	.213	.832
	Teammates	-.950	.492	-.195	-1.93	.055
	Health-Related Professionals	.074	.541	.013	.136	.892
Depression[c]	Family	.873	.794	.090	1.10	.273
	High School Friends	-.220	.411	-.045	-.535	.593
	College Friends	-.619	.571	-.096	-1.08	.280
	Teammates	-.082	.442	-.019	-.186	.852
	Health-Related Professionals	-.703	.486	-.144	-1.45	.150

Table 18 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Fatigue[d]	Family	.309	.915	.028	.337	.736
	High School Friends	.418	.474	.076	.882	.379
	College Friends	-.129	.658	-.018	-.197	.844
	Teammates	-.046	.509	-.010	-.091	.928
	Health-Related Professionals	.019	.560	.003	.034	.973
Sleep Disturbance[e]	Family	-.407	.750	-.045	-.542	.589
	High School Friends	-.797	.388	-.174	-2.05	.042
	College Friends	.142	.539	.023	.264	.792
	Teammates	.340	.418	.083	.813	.417
	Health-Related Professionals	-.532	.459	-.115	-1.16	.249
Social Functioning[f]	Family	.835	.786	.088	1.06	.290
	High School Friends	.164	.407	.034	.402	.689
	College Friends	.349	.565	.055	.617	.538
	Teammates	.057	.438	.013	.130	.897
	Health-Related Professionals	.180	.482	.038	.374	.709

Table 18 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Pain Interference[g]	Family	-.188	.658	-.023	-.285	.776
	High School Friends	.066	.340	.017	.195	.845
	College Friends	-.350	.473	-.065	-.379	.461
	Teammates	.753	.366	.210	-2.06	.041
	Health-Related Professionals	.196	.403	.048	.486	.627
Pain Intensity[h]	Family	.118	.197	.050	.598	.551
	High School Friends	-.078	.102	-.065	-.763	.446
	College Friends	-.209	.142	-.131	-1.47	.143
	Teammates	.184	.110	.173	1.68	.095
	Health-Related Professionals	.003	.121	.002	.021	.983

[a]- $F_{(5, 157)}$= 1.28, p= .272, R= .198, R^2= .039; [b]- $F_{(5, 157)}$= 2.21, p=.056, R= .257, R^2= .066; [c]- $F_{(5, 157)}$= 1.64, p=.154, R= .223, R^2= .050; [d]- $F_{(5, 157)}$= .221, p=.953, R= .084, R^2= .007; [e]- $F_{(5, 157)}$= 1.52, p=.187, R= .215, R^2= .046; [f]- $F_{(5, 157)}$= .727, p=.604, R= .150, R^2= .023; [g]- $F_{(5, 157)}$=1.72, p=.133, R= .228, R^2= .052; [h] $F_{(5, 157)}$=1.12, p=.355, R= .185, R^2= .034
*p<.002

Exploratory Questions

EQ1: Will there be differences in reliance on and satisfaction of social support between college athletes and non-athlete undergraduate students?

Exploratory question 1 examined potential differences in reliance on and satisfaction of social support between college athletes and non-athlete undergraduate students. Two separate MANOVA's for reliance on and satisfaction of social support were conducted. Results revealed significant differences between student-athletes and non-athletes on social support reliance ($F_{(5, 390)} = 5.25$, $p = < .001$; Wilk's $\Lambda = 0.937$, partial $\eta^2 = .06$). Specifically, student-athletes reported a higher reliance on social support from teammates ($F_{(1, 394)} = 20.19$; $p = < .001$; partial $\eta^2 = .05$) when compared to non-athletes. There were no significant between group differences for social support reliance on family ($F_{(1, 394)} = .003$; $p = .960$; partial $\eta^2 = .000$), high school friends ($F_{(1, 394)} = .058$; $p = .810$; partial $\eta^2 = .000$), college friends ($F_{(1, 394)} = .682$; $p = .409$; partial $\eta^2 = .002$), or health-related professionals ($F_{(1, 394)} = 6.22$; $p = .013$; partial $\eta^2 = .02$) (see Table 19).

Results for satisfaction of support revealed a significant difference between student-athletes and non-athletes ($F_{(5, 391)} = 42.37$, $p = < .001$; Wilk's $\Lambda = 0.649$, partial $\eta^2 = .35$). Specifically, student-athletes reported higher satisfaction of support from teammates ($F_{(1, 395)} = 185.97$; $p = <.001$; partial $\eta^2 = .32$), and health-related professionals ($F_{(1, 395)} = 44.75$; $p = <.001$; partial $\eta^2 = .10$) when compared to their non-athlete counterparts. No significance difference was found for family ($F_{(1, 395)} = 8.09$; $p = .005$; partial $\eta^2 = .02$), college friends ($F_{(1, 395)} = 5.71$; $p = .017$; partial $\eta^2 = .01$), or high school friends ($F_{(1, 395)} = .749$; $p = .387$; partial $\eta^2 = .002$) (see Table 20).

Table 19

Means and Standard Deviations for Social Support Reliance for Student-athletes (n = 234) and Non-athletes (n = 162).

Social Support	Student-Athletes		Non-Athlete Students	
	M	*SD*	*M*	*SD*
Reliance on Family	5.96	.267	5.96	.292
Reliance on High School Friends	5.90	.578	5.91	.534
Reliance on College Friends	5.94	.405	5.90	.483
Reliance on Teammates	5.96	.379	5.53	1.36
Reliance on Health-Related Professionals	5.84	.746	5.57	1.34

Table 20

Means and Standard Deviations for Social Support Satisfaction for Student-athletes (n = 234) and Non-athletes (n = 162).

Social Support	Student-Athletes		Non-Athlete Students	
	M	*SD*	*M*	*SD*
Family Satisfaction	5.68	.614	5.48	.795
High School Friends Satisfaction	4.02	1.59	4.17	1.58
College Friends Satisfaction	4.85	1.08	4.57	1.19
Teammates Satisfaction	4.94	1.03	3.01	1.77
Health-Related Professionals Satisfaction	4.02	1.51	3.59	1.62

EQ2: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived wellness in college athletes and non-athlete undergraduate students?

Exploratory question 2 examined the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived wellness in college athletes and non-athlete undergraduate students. A series of linear multiple regression analyses were conducted to determine what contribution each variable had on perceived wellness (see Table 21). Results revealed that for student-athletes, results showed significant prediction for Anxiety (R^2=.156, $F_{(6,247)}$=7.63, *p*=<.001), and Social Functioning (R^2=.103, $F_{(6,248)}$=4.74, *p*=<.001). Specifically, being a female athlete was associated with higher Anxiety (β =8.04, *p*=<.001) and Fatigue (β =5.49, *p*=<.001). Additionally, being a female athlete (β =-4.91, *p*=<.001) and class grouping (β

=-1.04, *p*=.033) were associated with lower Social Functioning. The highest variance accounted for was 15.6% for Anxiety, followed by 10.3% for Social Functioning. No significant prediction existed for Physical Functioning (R^2=.032, $F_{(6,247)}$=1.35, *p*=.234), Fatigue (R^2=.081, $F_{(6,248)}$=3.63, *p*=.002), Depression (R^2=.068, $F_{(6,248)}$=3.03, *p*=.007), Sleep Disturbance (R^2=.058, $F_{(6,248)}$=2.54, *p*=.021), Pain Interference (R^2=.038, $F_{(6,248)}$=1.65, *p*=.134), and Pain Intensity (R^2=.014, $F_{(6,248)}$=.585, *p*=.742).

Table 21

Regression Model for Demographic Variables and Wellness in Student-athletes (n = 254)

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Sex	-1.84	.716	-.166	-2.53	.012
	Class	.062	.299	.014	.208	.836
	Credits	.179	.192	.059	.934	.351
	Scholarship	-.058	.211	-.018	-.275	.783
	Sport Hrs	-.093	.064	-.097	-1.46	.143
	Work Hrs	-.012	.065	-.013	-.187	.852
Anxiety[b]	Sex	8.04	1.22	.403	6.59	<.001*
	Class	.277	.510	.033	.544	.587
	Credits	-.370	.327	-.067	-1.13	.259
	Scholarship	.388	.359	.067	1.08	.281
	Sport Hrs	.197	.109	.112	1.81	.071
	Work Hrs	.000	.111	.000	-.004	.997

Table 21 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Depression[c]	Sex	4.57	1.11	.265	4.13	<.001
	Class	.007	.461	.001	.015	.988
	Credits	-.343	.296	-.072	-1.16	.248
	Scholarship	-.060	.326	-.012	-.185	.853
	Sport Hrs	.081	.098	.053	.827	.409
	Work Hrs	-.062	.101	-.041	-.614	.540
Fatigue[d]	Sex	5.49	1.24	.282	4.41	<.001
	Class	.500	.518	.061	.966	.335
	Credits	-.484	.333	-.090	-1.45	.148
	Scholarship	.352	.367	.062	.960	.338
	Sport Hrs	.112	.111	.065	1.01	.313
	Work Hrs	-.059	.113	-.034	-.518	.605
Sleep Disturbance[e]	Sex	2.44	.946	.167	2.58	.010
	Class	.112	.394	.018	.285	.776
	Credits	-.263	.253	-.065	-1.04	.301
	Scholarship	.543	.279	.128	1.95	.052
	Sport Hrs	-.130	.084	-.100	-1.55	.123
	Work Hrs	-.109	.086	-.085	-1.27	.205
Social Functioning[f]	Sex	-4.91	1.16	-.266	-4.22	<.001*
	Class	-1.04	.484	-.134	-2.15	.033*
	Credits	-.007	.311	-.001	-.023	.981
	Scholarship	-.375	.342	-.070	-1.09	.274
	Sport Hrs	-.151	.103	-.093	-1.46	.145
	Work Hrs	-.110	1.06	-.068	-1.04	.297

Table 21 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Pain Interference[g]	Sex	2.89	1.07	.176	2.69	.008
	Class	-.079	.448	-.011	-.177	.860
	Credits	-.378	.288	-.083	-1.31	.191
	Scholarship	-.175	.317	-.037	-.551	.582
	Sport Hrs	.111	.096	.076	1.15	.249
	Work Hrs	.015	.098	.010	.152	.880
Pain Intensity[h]	Sex	.483	.280	.114	1.72	.086
	Class	-.043	.117	-.024	-.370	.712
	Credits	-.003	.075	-.003	-0.42	.967
	Scholarship	-.035	.083	-.029	-.427	.669
	Sport Hrs	.010	.025	.027	.406	.685
	Work Hrs	-.003	.025	-.008	-.117	.907

[a]- $F_{(6, 247)}$= 1.35, p= .234, R= .178, R^2= .032; [b]- $F_{(6, 247)}$= 7.63, p=<.001, R= .395, R^2= .156; [c]- $F_{(6, 248)}$= 3.03, p=.007, R= .261, R^2= .068; [d]- $F_{(6, 248)}$= 3.63, p=.002, R= .284, R^2= .081; [e]- $F_{(6, 248)}$= 2.54, p=.021, R= .240, R^2= .058; [f]- $F_{(6, 248)}$= 4.74, p=<.001, R= .321, R^2= .103; [g]- $F_{(6, 248)}$=1.65, p=.134, R= .196, R^2= .038; [h] $F_{(6, 248)}$=.585, p=.742, R= .118, R^2= .014
*p<.002

For the non-athlete group, results showed significant prediction for Fatigue (R^2=.143, $F_{(6,209)}$=5.79, p=<.001) and Pain Interference (R^2=.106, $F_{(6,209)}$=4.09, p=.001) (see Table 22). Specifically, being a female non-athlete (β =2.83, p=.018) and work hours (β =.298, p=<.001) were positively related to Fatigue and sport hours was positively related to Pain Interference (β =.334, p=<.001). The highest variance accounted was 14.3% for Fatigue, followed by 10.6% for Pain Interference. No significant results existed for Physical Functioning (R^2=.059, $F_{(6,209)}$=2.19, p=.046), Depression (R^2=.072, $F_{(6,209)}$=2.69, p=.015), Anxiety (R^2=.049, $F_{(6,209)}$=1.78, p=.104), Social Functioning (R^2=.069, $F_{(6,209)}$=2.58, p=.019), Sleep Disturbance (R^2=.043, $F_{(6,209)}$=1.57, p=.158), or Pain Intensity (R^2=.072, $F_{(6,209)}$=2.70, p=.015).

Table 22

Regression Model for Demographic Variables and Wellness in Non-athletes (n = 216)

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Physical Functioning[a]	Sex	-1.24	.555	-.156	-2.24	.026
	Class	.147	.203	.055	.725	.469
	Credits	.051	.139	.027	.366	.751
	Scholarship	-.042	.511	-.006	-.082	.935
	Sport Hrs	-.169	.061	-.192	-2.79	.006
	Work Hrs	.022	.028	.056	.763	.446
Anxiety[b]	Sex	3.12	1.18	.184	2.64	.009
	Class	.241	.433	.043	.558	.577
	Credits	.268	.295	.066	.909	.365
	Scholarship	-.693	1.08	-.043	-.637	.525
	Sport Hrs	-.106	.129	-.057	-.819	.413
	Work Hrs	.041	.060	.050	.677	.499
Depression[c]	Sex	1.56	1.12	.096	1.39	.164
	Class	-.125	.409	-.023	-.305	.761
	Credits	.711	.279	.183	2.54	.012
	Scholarship	-1.71	1.03	-.112	-1.66	.098
	Sport Hrs	-.057	.122	-.032	-.467	.641
	Work Hrs	1.27	.057	.162	2.23	.027
Fatigue[d]	Sex	2.83	1.18	.157	2.38	.018*
	Class	-.812	.435	-.136	-1.86	.064
	Credits	.572	.297	.133	1.92	.056
	Scholarship	-.208	1.09	-.012	-.189	.850
	Sport Hrs	.008	.130	.004	.059	.953
	Work Hrs	.298	.061	.342	4.91	.<001*

Table 22 Cont'd

Outcomes	Predictors	*B*	*SE B*	*β*	*t*	*p*
Sleep Disturbance[e]	Sex	.479	1.01	.033	.474	.636
	Class	-.422	.371	-.088	-1.14	.256
	Credits	.358	.253	.104	1.41	.158
	Scholarship	-1.27	.933	-.093	-1.37	.173
	Sport Hrs	.090	.111	.056	.809	.419
	Work Hrs	.101	.052	.144	1.95	.053
Social Functioning[f]	Sex	-.477	1.06	-.029	-.423	.673
	Class	-.245	.388	-.048	-.632	.528
	Credits	-.315	.265	-.086	-1.19	.235
	Scholarship	1.27	.976	.088	1.30	.194
	Sport Hrs	-.147	.116	-.087	-1.27	.205
	Work Hrs	-.163	.054	-.219	-3.01	.003
Pain Interference[g]	Sex	-1.12	.845	-.090	-1.32	.187
	Class	-.562	.310	-.135	-1.82	.071
	Credits	.247	.211	.083	1.17	.244
	Scholarship	-.518	.779	-.044	-.665	.507
	Sport Hrs	.334	.093	.242	3.61	<.001*
	Work Hrs	.065	.043	.107	1.49	.135
Pain Intensity[h]	Sex	.060	.258	.016	.234	.815
	Class	-.132	.094	-.106	-1.39	.165
	Credits	.046	.064	.051	.714	.476
	Scholarship	-.152	.238	-.043	-.638	.524
	Sport Hrs	.094	.028	.228	3.34	.001
	Work Hrs	.003	.013	.018	.246	.806

[a]- $F_{(6, 209)}$= 2.19, p= .046, R= .243, R^2= .059; [b]- $F_{(6, 209)}$= 1.78, p=.104, R= .221, R^2= .049; [c]- $F_{(6, 209)}$= 2.69, p=.015, R= .268, R^2= . 072; [d]- $F_{(6, 209)}$= 5.79, p=<.001, R= .378, R^2= .143; [e]- $F_{(6, 209)}$= 1.57, p=.158, R= .207, R^2= .043; [f]- $F_{(6, 209)}$= 2.59, p=.019, R= .263, R^2= .069; [g]- $F_{(6, 209)}$=4.09, p=.001, R= .324, R^2= .105; [h] $F_{(6, 209)}$=.2.70, p=.015, R= .268, R^2= .072

*p<.002

EQ3: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived stress in college athletes and non-athlete undergraduate students?

Exploratory question 3 examined the contribution of sex, class group, scholarship, credits, sport hours, and work hours to perceived stress in college athletes and non-athlete undergraduate students to perceived stress in college athletes and non-athlete undergraduate students. A multiple regression was performed and results revealed that for the student-athlete group, there was a significant prediction for perceived stress (R^2=.105, $F_{(6,248)}$=4.83, p=<.001). Sex was the only significant predictor (β =5.37, p=<.001), with female athletes associated with higher perceived stress compared to male athletes, predicting 10.5% of the variance. For the non-athlete group, there was no significant prediction for perceived stress (R^2=.040, $F_{(6,209)}$=1.44, p=.201)

EQ4: What is the contribution of sex, class group, scholarship, credits, sport hours, and work hours to social support satisfaction in college athletes and non-athlete undergraduate students?

Finally, exploratory question 4 examined the contribution of sex, class group, scholarship, credits, sport hours, and work hours to social support satisfaction in college athletes and non-athlete undergraduate students. A series of multiple regressions were performed and results for the student-athlete group revealed that no significant findings were reported for satisfaction from family (R^2=.037, $F_{(6,247)}$=1.58, p=.153), satisfaction from high school friends (R^2=.058, $F_{(6,237)}$=2.42, p=.028), satisfaction from college friends (R^2=.067, $F_{(6,244)}$=2.91, p=.009), satisfaction from teammates (R^2=.012, $F_{(6,246)}$=.499, p=.809), or satisfaction from health-related professionals (R^2=.036, $F_{(6,229)}$=1.43, p=.202).

For non-athletes, significance was found for satisfaction from teammates (R^2=.197, $F_{(6,146)}$=5.95, p=<.001) where class group (β =-.210, p=.028) was negatively associated and sport hours (β =.126, p=<.001) was positively associated, with both factors explaining 19.7% of the variance. No significance was found for satisfaction from family (R^2=.045, $F_{(6,207)}$=1.61, p=.141), satisfaction from high school friends (R^2=.057, $F_{(6,204)}$=2.07, p=.058), satisfaction from college friends (R^2=.014, $F_{(6,205)}$=.497, p=.810), or health-related professionals (R^2=.030, $F_{(6,175)}$=.892, p=.502).

CHAPTER 5

DISCUSSION

The term wellness is best defined as an individual's "physical, mental, and social well-being not merely in the absence of disease" (World Health Organization, 1948). It has been noted that the general public usually perceives the collegiate athlete population as a very healthy group who do not encounter many wellness issues (Etzel et al., 2006). However, while college student-athletes may have an advantage with regards to physical training and other resources compared to the general college student population, this does not mean student-athletes will not experience issues with their quality of life. Therefore, the purpose of the current study was to assess perceived wellness, perceived stress, and social support of male and female collegiate student-athletes and non-athlete students and examine their interrelationships.

General Summary of Results

The results of the current study indicated that collegiate student-athletes have lower perceptions of wellness when compared to their non-athlete peers. However, it is important to discuss the clinical significance of these findings. While student-athlete wellness was statistically significantly worse than non-athletes, the clinical significance is less apparent. Both the student-athlete and non-athlete groups reported a low number of individuals that fell clinically below the average population on all wellness scales. This would indicate that both the student-athlete and non-athlete groups overall were physically, psychologically, and socially well when compared to the general population.

Likewise, with regards to perceived stress, both the student-athlete and non-athlete groups had a relatively low number of individuals that could be categorized as high stress. These data would indicate that overall, both the student-athlete and non-athlete groups had low stress.

This was further indicated in the data that no significant difference in perceived stress existed between student-athletes and non-athletes. Additionally, a higher perceived stress score was a significant predictor of lower perceived wellness in both the student-athlete and non-athlete groups, while higher social support satisfaction was a significant predictor of lower stress for student-athletes, but not non-athletes. Higher satisfaction of social support also predicted higher perceived wellness in student-athletes, although not for non-athletes. Student-athletes showed higher reliance on and satisfaction of social support compared to non-athletes, and multiple demographic variables predicted scores on perceived wellness, perceived stress, and social support satisfaction in student-athletes and non-athletes.

Overall Perceived Wellness in Student-Athletes and Non-Athletes

While student-athletes reported an overall high perception of wellness for each wellness subscale compared to the normative population data on the PROMISv2.0 measure, the results of the current study did indicate that student-athletes had significantly lower perceptions of wellness on the scales of Physical Functioning, Fatigue, Social Functioning, Pain Interference, and Pain Intensity when compared to their non-athlete counterparts. These results support the findings in the literature that student-athletes' perceptions of wellness are often lower than that of non-athletes (Simon & Docherty, 2014; Valovich-McLeod, et al., 2009; Watson & Kissinger, 2007). Given the amount of physical training collegiate student-athletes endure on a day to day basis, it would stand to reason they would score significantly worse on Physical Functioning, Fatigue, Pain Interference, and Pain Intensity compared to non-athletes. By nature of engaging in collegiate sport, student-athletes have a greater likelihood of experiencing soreness or incurring injuries that could significantly hamper their daily physical functioning and heighten pain experiences when compared to non-athletes.

Moreover, Fatigue is a common issue for college student-athletes, with daily schedules that include classes, practice, training, team meetings, games/travel, and other responsibilities associated with being a student-athlete. Additionally, researchers have discussed how college student-athletes have a number of responsibilities with their academics and athletics that will often leave little time for social endeavors (Birky, 2007; Cosh & Tully, 2014). This would support the results of the current study where student-athletes showed significantly lower Social Functioning than non-athletes. Given the time consuming nature of being a collegiate student-athlete, this group often does not have the time to engage in meaningful social experiences in the same way of non-athletes.

While intense training is a part of sport, specifically at higher levels of collegiate competition, it is important to take note of these findings and consider factors that contribute to the physical and pain experience domains of wellness for college student-athletes compared to non-athletes. Likewise, creating social atmospheres for student-athletes to take part outside of their sport may help increase their perceptions of functioning in the social realm of college life to that of non-athletes. Health and wellness is a vital component in creating healthy, positive experiences for collegiate athletes during their tenure in college (LaFountaine, 2009). The health and wellness of college student-athletes has been a topic of continued discussion and concern. Simon and Docherty (2014) assessed wellness in a sample of former Division I collegiate student-athletes and found that they scored significantly lower when compared to former non-collegiate athletes. Being a college student-athlete carries an inherent risk of demanding physical and psychological limits that one must endure during their collegiate careers.

However, the student-athlete group in the current study was considered “well” when compared to the normative population data for each wellness subscale on the PROMISv2.0. This

may be a result limited to the current sample, or an indication that the critical wellness issues in college student-athletes reported by previous researchers (Simon & Docherty, 2014; Watson & Kissinger, 2007) are limited to a small number of student-athletes. Furthermore, the overall higher perceptions of wellness may reflect being at a large Division I university, where athletic departments can provide significant funding for resources that may include upgraded and enhanced sports medicine facilities, counseling for various psychological conditions, and academic support in the form of tutoring, mentorship, and advising. These resources may add significant daily functioning improvements for student-athletes that have positive consequences on wellness perceptions. The student-athlete group also reported a group mean of less than 1 for all injury classifications. The demographic questions regarding injury instructed participants to indicate any injuries received during all years in college, not just at the current time of data collection. It is possible that many of the reported injuries were past injuries and not current at the time of data collection, therefore indicating that it was a relatively healthy sample of college student-athletes. Moreover, given that college athletes invest a great deal of time and effort into their sport, they may be likely to engage in behaviors that would promote higher wellness such as enhanced physical training, proper nutrition, and adequate rest and recovery. Finally, the current study did not include student-athletes from Football or Basketball, and only one student-athlete from Ice Hockey. These sports are high revenue generating and generally considered high impact, particularly Football and Ice Hockey, where frequent collisions occur and high rates of injury exist. Furthermore, the pressure to perform in these sports is often higher than other sports that were represented in the current study (i.e., Cheerleading, Dance, Rowing). Not including student-athletes from these higher revenue and impact sports may have certainly influenced perceived wellness scores in the student-athlete group.

Overall Perceived Stress in Student-Athletes and Non-Athletes

The current study indicated that there are no significant differences on perceived stress between student-athletes and non-student athletes. Lazarus (2000) stated that competitive sport could be seen as stressful by athletes due to stressors such as performance pressures, consistent evaluation, and great personal investment that athletes make of themselves into their sport. However, the results of the current study did not support the notions made by Lazarus. Empirical evidence in the research remains lacking as to a whether a consistent trend in perceived stress differences between student-athletes and non-athletes exist.

There are a few possible reasons why the current study did not find differences in perceived stress between student-athletes and non-athletes. One possible reason is athletes have also reported using sport as a coping mechanism of stress (i.e., venting frustrations of life, teammate support, experience) (Kimball & Freysinger, 2003). Additionally, the current study revealed that the non-athlete group reported spending approximately 3.5 hours per week participating in sport and approximately 7.5 hours per week devoted to work. It is possible the student-athletes in the current study perceived sport as a significant stress reliever and the non-athlete group perceived their weekly schedules as low stress. Given the higher perceptions of overall wellness in both student-athlete and non-athlete groups, it is possible that no significant wellness issues were present in either group to cause any significant perceived stress. A number of student-athletes in the current study were from Cheerleading and Dance, which may not be subjected to the same rigorous training schedule or competition pressure as other sports. Also, as previously mentioned, not accounting for high revenue and high impact sports like Football, Basketball, or Ice Hockey may have influenced the results. In addition, when discussing stress among a college population, it is important to account for the timing of the semester when stress

is measured. The timing can certainly affect the level of stress perceptions among college students and whether they perceive greater stress or less stress (Brown, 1986). This same reasoning may indeed be applied to college student-athletes in regards to in-season versus off-season training, practice and competition schedules, and performance outcomes.

Finally, the Perceived Stress Scale (Cohen et al., 1983) measures stress on a scale to 56, with higher scores indicating more stress. The current study showed student-athlete and non-athlete mean stress scores to be in the mid-20's, which would indicate a lower stress level. It is possible that for this particular group of student-athletes and non-athletes, the time at which data was collected may have been at a point in the semester of lower stress. It is important to note, this was one sample of student-athletes and non-athletes taken at a large Division I university. Stress is also a transient experience and the current study was a one-time assessment. Understanding the ebb and flow of perceived stress between student-athletes and non-athletes over time may go a long way into examining the true nature of stress experiences between the two groups, and if differences exist consistently.

Impact of Perceived Stress on Perceived Wellness in Student-Athletes and Non-Athletes

Results revealed that for the student-athlete group, higher perceived stress was significantly related to increases in the wellness subscales of Anxiety, Depression, Fatigue, Sleep Disturbance, Pain Interference, and Pain Intensity. Likewise, increased perceived stress was related to lower Social Functioning. The highest variance was 34.3 percent for Depression, followed by Anxiety at 32.7 percent. The non-athlete group indicated that perceived stress resulted in significantly higher Anxiety, Depression, Fatigue, Sleep Disturbance, and Pain Intensity. Additionally, higher perceived stress resulted in significantly lower Social Functioning. The highest variance accounted for in non-athletes was 23.6 percent for Depression

and 17.7 percent for Sleep Disturbance.

These results do support the research where increases in perceived stress results in lower perceptions of health and well-being (Hudd et al., 2000). As noted by Hudd and colleagues, college students must learn to balance the demands of academics, social growth, and general daily needs in order to function properly. Moreover, college athletes must manage all of the aforementioned demands of college students, in addition to their sport responsibilities. However, the low to moderate variances accounted for by stress in student-athletes and non-athletes may be attributed to the overall low perceived stress reported by both groups and therefore suggests other factors may be contributing as well. It is clear that perceived stress is having a negative effect on wellness perceptions for both groups. However, considering the overall higher wellness perceptions for student-athlete and non-athlete groups, the clinical significance of this effect may not be present. Potential stressors that were present at the time of data collection may not have been serious enough to warrant significant declines in wellness, but may account for the small declines outside of perceived stress. Given the population of the current study consists of college student-athletes and non-athletes, influences on wellness perceptions may have been related to stressors common among a college population (Brougham et al., 2009; Cosh & Tully, 2014; Hudd et al., 2000; Misra et al., 2000). These stressors might include poor academic progress or recent increase in academic coursework at the time of data collection, personal concerns involving family members or romantic partner, or financial concerns.

For student-athletes specifically, wellness perceptions may have been further affected from sport-related issues that non-athletes do not encounter including changing of team role, intense physical training, pressure to win, coach dissatisfaction, or poor sport performance (Gan & Anshel, 2009; Kimball & Freysinger, 2003; Watson & Kissinger, 2007). Moreover, student-

athletes may have had added difficulty balancing academic and athletic responsibilities (Birky, 2007), which negatively contributed to wellness, albeit on a non-clinical scale. It may also be of importance to note that the Perceived Stress Scale measures general and broad stress perceptions within the last month, while the PROMISv2.0 measures wellness perceptions within the previous 7 days. It is possible more specific concerns were present at the exact time of data collection (i.e., within the previous 7 days), but considered temporary, and not viewed as a stressor that has been continuous within the last month. Additionally, there may be preexisting factors that were not accounted for in the current study which could further influence student-athlete and non-athlete wellness scores on these particular subscales at the time of data collection. The current study showed no significant difference in the perceived stress level of student-athletes and non-athletes, and that overall perceived stress levels in both groups were considered low. However, the results do indicate that there still exists a small negative effect of perceived stress on the wellness perceptions of both groups.

Research has suggested that stress can have detrimental effects on health (Cohen & Williamson, 1991; O'Leary, 1990), and can result in symptoms such as irritability, emotional instability and tenseness, concentration and memory problems, fatigue, and changes in appetite (Stilger et al., 2001). These symptoms will no doubt influence perceptions of wellness, while also influencing the actual state of wellness in individuals. Moreover, Park et al., (2004) suggest that higher stress can lead to improper coping behaviors (i.e., alcohol, poor eating), which may also lead to wellness concerns. Examining differences for the impact of perceived stress on perceived wellness in student-athletes should be one of continued development. As previously mentioned, understanding the perceptions, experiences, and sources of stressors in student-athletes will certainly lend information to health-related professionals in developing effective

coping and/or treatment procedures for student-athletes. It is understandable that student-athletes and non-athletes each will face unique challenges specific to their group. Considering the nature of collegiate athletics, the student-athlete population may face stressors that non-athletes do not, thus leading to further decreases in wellness that may not be as prevalent in the non-athlete population. Moreover, examining stress levels at multiple points during a sport season and school semester where comparisons between low stress and high stress' effect on wellness can be made, will indeed be useful.

Impact of Social Support Satisfaction on Perceived Stress in Student-Athletes and Non-Athletes

The present study's findings revealed that for the student-athlete group, higher satisfaction of support from family significantly predicted a lower level of perceived stress, however only predicting 12.9 percent of the variance. Hefner and Eisenberg (2009) found that college students who reported lower social support also reported higher anxiety, while Ruthig et al. (2009) showed that students with higher social support had less stress and depression. Additionally, the results of Chao (2012) showed a significant negative relationship between stress and well-being for students who reported low overall social support. With regards to the findings of the current study, family represents a strong social support system for student-athletes. Moreover, given the low overall perceived stress in the student-athlete group, family may have been the only social support structure needed. Rosenfeld and colleagues (1989) reported that student-athletes rated parents as giving technical appreciation, emotional, and listening support. Furthermore, it is possible that only satisfaction of family support significantly predicted perceived stress given the deep and personal nature of familial relationships. Parents, among other family members, often are a source of motivational influence and comfort for

student-athletes. Parents of student-athletes are likely to come watch games, attend team functions, and be involved with their children's athletic careers in college.

Interestingly, Yang et al.'s (2009) study found that pre-injury support satisfaction for student-athletes was highest for family and friends. However, after student-athletes incurred a sport injury, there was an increased satisfaction of support from friends, coaches, athletic trainers, and physicians, but not family. The authors stipulated that this finding most likely represents student-athletes being away from their families while at school, the close proximity of friends, in addition to the highly involved nature of coaches, athletic trainers, and physicians in the rehabilitation process. While these results were injury specific, it emphasizes that social support can be situation specific, and the overall need of a multi-level social support network for student-athletes.

Conversely, the lack of social support satisfaction significantly predicting perceived stress in the non-athlete group may be the result of a lack of perceived need for social support. Research favors the positive impact of social support on stress (Cohen & Wills, 1985; Hefner & Eisenberg, 2009); however, it was not shown to be significant in the current study for non-athletes. With the nature of low stress scores among the non-athlete group in the current study, the lack of significance for social support may be attributed to the non-athlete group not perceiving a need to utilize their social support structures in a time of low stress levels. Additionally, non-athletes may have viewed their perceived stressors to be under their control by engaging in personal coping mechanisms that did not invoke the use of their social support structures. Furthermore, it is conceivable that non-athlete students were either unaware that specific support services exist for them within the campus environment, or simply did not make use of those services (Yorgason, Linville, & Zitman, 2008).

Impact of Social Support Satisfaction on Perceived Wellness in Student-Athletes and Non-Athletes

In addition to finding that higher satisfaction of support from family predicted a lower level of perceived stress, the current study also indicated that higher social support satisfaction from family significantly predicted lower Anxiety and satisfaction from family and college friends significantly predicted lower Depression in the student-athlete group. The highest variance reported was 15.5 percent for Depression, followed by 9.3 percent for Anxiety. These results highlight the importance of social support, and its positive effect on health and wellness. Srivastava and Barmola (2012) hypothesized that individuals who do not have a strong social support network may be affected negatively due to the lack of social associations with others. Results from Hale and colleagues (2005) found that social support in a college population predicted health perceptions for women, while predicting physical symptomology for men. That is, having stronger social support was related to better health perceptions for women and fewer adverse physical health symptoms for men. Furthermore, Cohen and Wills (1985) surmised that social support creates regular positive experiences for an individual to enhance health and well-being through a main effect. Therefore, being engaged in a consistent social support network may have helped student-athletes avoid negative situations that would have led to decreased perceived wellness perceptions.

The two main sources of support that impacted student-athlete wellness in the current study were family and college friends. As previously mentioned, family represents a strong bond of support that is exists in a student-athlete's life prior to college. With regards to college friends, it is possible that student-athletes perceived fellow athletes on other teams as college friends. While not specifically teammates, in a collegiate environment, it is very common for student-

athletes on various teams to formulate bonds with one another; given they all share a common existence as student-athletes (Wolf-Wendel, Toma, & Morphew, 2001).

However, research has shown that individuals with stronger problem-solving abilities, problem-solving confidence, problem-solving personal control, and problem-solving approach tend to have lower perceived stress and higher perceived health (Largo-Wright et al., 2005). Student-athletes may have had higher problem-solving abilities and confidence, which led to more positive perceptions of wellness and smaller variances accounted by social support satisfaction for the Depression and Anxiety subscales.

There was no significant effect for social support satisfaction and perceived wellness in the non-athlete group. Universities often provide basic services to its student population to enhance wellness; however, non-athlete students in the current study may have not required any such support given their lower perceived stress levels and higher overall wellness perceptions. Additionally, Li and Lindsey (2013) stated that college students often would not discuss health concerns with a health professional, or report experiencing any unusual signs or symptoms. This may also be true of seeking out social support for various physical, psychological, or social wellness issues non-athlete students may encounter. As previously mentioned, non-athlete students may also be unaware that specific support services exist for them on campus, or decided to not make use of the services (Yorgason et al., 2008). However, with the results of the current study, it is likely that non-athletes simply did not need social support. Given the low stress levels and overall positive state of wellness in the non-athlete group, social support structures did not need to be engaged and therefore was not significant in maintaining positive wellness. It is also conceivable that non-athletes also demonstrated an increased problem-solving ability, problem-solving confidence, problem-solving personal control, and problem-solving approach mentioned

by Largo-Wright and colleagues (2005) that aided in social supported being a non-significant factor for wellness in this group.

Differences on Social Support Reliance and Social Support Satisfaction in Student-Athletes and Non-Athletes

Results revealed a significant difference between student-athletes and non-athletes on social support reliance. Specifically, student-athletes showed more reliance on teammates than non-athletes. This finding would indeed seem rational given that student-athletes spend a significant amount of time with their teammates. Furthermore, it seems likely that teammates share many of the common scheduling and stressors that come with being a student-athlete, thus making it easier to relate to one another and seek support. As for social support satisfaction, student-athletes reported a higher satisfaction for teammates and health-related professionals. Student-athletes would be likely to have a higher satisfaction of support for teammates and health-related professionals given their close proximity and time spent together on a regular basis during the competitive season with weekly practice, competitions, and traveling, and with continued training during the off-season.

Contribution of Demographic Factors on Perceived Wellness in Student-Athletes and Non-Athletes

The findings of the current study revealed that for the student-athlete group, the sex of the student-athlete was a significant contributor to perceived wellness. Sex predicted scores on the wellness subscales of Anxiety, while sex and class grouping significantly predicted scores on Social Functioning. Specifically, being a female student-athlete was related to higher Anxiety, while being a female student-athlete and class grouping was related to lower Social Functioning

The highest variance was accounted for by Anxiety at 15.6 percent and 10.3 percent for Social Functioning, which would indicate a small effect for each variable.

Similar to the current findings, researchers have reported females scoring higher on various psychological wellness scales such as Anxiety (Bouchard & Shih, 2013; Hudd et al., 2000; Rawson et al., 1994). However, the low variances would suggest contributions from other influential factors as well. Most female student-athletes in the current study were either in off-season training or just completing their competitive season at the time of data collection. For the female student-athletes engaging in off-season training, each sport carries different difficulty levels in training methods and times of the day at which peak training occurs (i.e., 6 a.m. vs. 3 p.m.). Engaging in off-season training, classes, and coursework multiple days a week may indeed have negatively impacted wellness perceptions related to Anxiety. For those that just completed their competitive season, it is possible that the length of season, personal and team results, and physical and psychological fatigue may have influenced the particular wellness perceptions related to Anxiety.

Additionally, being a female student-athlete and class grouping both had a negative relationship with Social Functioning. It is possible this finding may be related to a higher number of female student-athletes in the current study, however, it is difficult to ascertain specifically why females would show lower Social Functioning when compared to males, as there is no definitive research to help explain this finding. The inverse relationship of class group may be more easily interpreted. As a student-athlete in college, responsibilities both academically and athletically can become stressful over time. Academically, classes may increase in difficulty and the prospect of graduation and career path become more prevalent. Research has long indicated that college student-athletes often are not prepared for life after sport, having failed to properly

set up career plans and goals while in college (Blann, 1985). Additionally, the continued pressure to perform in school and sport may induce higher levels of perceived stress and anxiety (Kimball & Freysinger, 2003). These factors may indeed contribute to a lower sense of overall Social Functioning, possibly due to a perceived lack of time or importance placed on engaging in social endeavors. This is however speculative and warrants further attention.

For the non-athlete group, results showed significant prediction for Fatigue and Pain Interference. Specifically, being a female non-athlete and work hours were positively related to Fatigue, and sport hours were positively related to Pain Interference. The highest variance accounted was by Fatigue at 14.3 percent followed by 10.6 percent for Pain Interference, which would indicate a small effect. It is possible that females perceived higher levels of fatigue due to work hours when compared to males. Research into Russian college students with jobs has shown they reported a significant degree of fatigue related to work, with women often reporting higher fatigue compared to men (Ivanova, 2014). Moreover, Fatigue may have been further influenced simply by perceptions of having to balance multiple demands that non-athletes often must do including classes, coursework, and having a job (Hudd et al., 2000). Other factors that may have been contributors could include lack of sleep at the time of data collection and/or poor diet habits. As for Pain Interference, the hours one spend in sport and physical activity, the more likely the chance of soreness or injury. This is particularly true for non-athletes who may not engage in sport and physical activity on a daily basis, or with the same rigor as student-athlete. Likewise, non-athletes who participate in sporting activities may not have the same access to treatment and recovery procedures as student-athletes. This may influence the level of pain being experienced by the non-athlete group with respect to the amount of hours spent participating in sporting activities. Given the low variance for sport hours predicting Pain Interference, further

influence on Pain Interference may be attributed to the time of data collection and the amount of sport activity non-athletes were competing in at that time. For example, if a non-athlete had just participated in intramural or club sport within the previous few days prior to data collection, perceptions of pain or soreness may be temporarily heightened, thus reflecting participation in intramural or club sport, but not necessarily indicative of the total number of hours per week spent in those activities. There may also be preexisting factors related to previous sport-related injuries or health conditions that could influence pain experiences as well for non-athletes.

Contribution of Demographic Factors on Perceived Stress in Student-Athletes and Non-Athletes

Results indicated that for the student-athlete group, sex was the only significant predictor with female student-athletes having higher perceived stress compared to male athletes. However, sex only predicted 10.5 percent of the variance, which is a small effect and suggests that sex is only a small contributor. This may be attributed to the greater number of female student-athletes in the current study. As previously discussed, it is well understood that females tend to show higher perceived stress levels than men (Bouchard & Shih, 2013; Hudd et al., 2000; Rawson, Bloomer, & Kendall, 1994). However, it must be understood that the actual number of stressors between males and females does not necessarily differ, but rather females' perception of the impact that stress is having in their life (Misra et al., 2000). With the low variance accounted for by sex, other variables related to academics, athletics, or personal life may be influencing stress perceptions. For example, controlling coaches, balancing schedules and time constraints, pressure to succeed in school and sport, gender stereotyping (i.e., female athletes being seen as "too masculine"), coach dissatisfaction, and overall sport performance have been reported by multiple researchers as strong influences for perceived stress in student-athletes (Cosh & Tully,

2014; Gan & Anshel, 2009; Kimball & Freysinger, 2003). Stress is transient in nature and a number of differing influences on stress, beyond the demographic variables measured in the current study, may have been present at the time of data collection in the current study.

For the non-athlete group, there was no significant prediction for perceived stress among any of the demographic variables tested. This result is in contrast to previous findings (Brougham et al., 2009) and may be due to the current sample reporting a low amount of stress. Given that the non-athlete group only worked an average of less than eight hours per week, it is possible they did not perceive a significant amount of stress outside of school. Moreover, timing of the semester may have had bearing on stress perceptions, possibly being one of lower stress and workload. Further research would be needed to ascertain if the lack of significance would be consistent in other non-athlete college student groups.

Contribution of Demographic Factors on Social Support Satisfaction in Student-Athletes and Non-Athletes

It was revealed that for student-athletes, no significant contributions existed for social support satisfaction. One possible explanation may be that the student-athlete group as a whole was satisfied with their support and no particular contributors had any significant bearing on social support satisfaction. This finding may need to be further examined to determine if this result is one of sampling or if it would be a consistent finding among other samples of college student-athletes. Interestingly, for the non-athlete group, significance was found for satisfaction from teammates with class group being negatively associated and sport hours being positively associated. Both factors explained 19.7 percent of the variance, which would indicate that, class group and sport hours contribute a small effect to the overall satisfaction from teammates. These

results may be explained by the fact that many non-athlete students participate in sporting activities through intramural, club, or recreational sport programs on campus. Over a third of non-athlete students in the current study participated in intramural or club sport activities. These individuals may have considered the participants on their intramural or club sport teams as their teammates, thus indicating that they were satisfied with their teammates. The negative association with class group may suggest that younger class groups (i.e., freshman) who may be transitioning into the college environment participate in intramural, club, or recreational sports in order to stay active and meet new people. The positive association with sport hours would further support this in that more sport hours results in higher satisfaction from teammates. The fun environment provided by these sport programs for non-athlete students may allow for social bonding between teammates that aids in social support. Therefore, continued research into the nature of teammate relationships among non-athlete students participating in intramural or club sport activities is warranted.

Limitations

The current study was not without limitations. The ability of participants to accurately and honestly self-report perceived wellness, perceived stress, and social support on the psychometric questionnaires, as false survey responses may threaten validity and reliability of responses on the study's questionnaires. This is defined as the Hawthorne Effect; which is as an alteration in behavior or performance resulting from the awareness of being involved in a research study (Campbell, Maxey, & Watson, 1995). Additionally, the sports represented included non-revenue and primarily non-contact, but did not include, or were not strongly represented, by major revenue or high contact sports such as football, basketball, and ice hockey. Furthermore, a large majority of the sports represented in the current study were out of season, or

just completing their season at the time of data collection. Moreover, all participants were located at one large university in the Midwest United States and thus may not be generalizable to other institutions of differing sizes and locations. The racial demographic was largely made up of Caucasian and therefore may be bias with respect to other racial demographics. There was also no controlling for preexisting factors (i.e., injury, psychological disorders, etc.) that may have influenced responses by participants in the current study. Further limitations included selection bias due to employing a more convenient rather than random sample, and data being collected during multiple points of the semester with no statistical comparisons being made in regards to timing of the semester.

Future Directions

While the results of the current study were helpful in advancing the knowledge of perceived wellness, perceived stress, and social support, particularly in college student-athletes, future research is still needed. Further analysis is needed into examining differences in wellness perceptions between student-athletes and non-athletes. The current study involved a sample at one large Division I institution. Examining wellness perceptions among student-athletes and non-athletes at other universities of differing sizes and locations is necessary. Additionally, one possible research endeavor for the future might include a qualitative approach. Having direct feedback from student-athletes and non-athletes may be a significant opportunity for coaches and the sports medicine staff to further gain knowledge into the various wellness perceptions of student-athletes, and how they specifically differ from the non-athlete population.

Continued research on examining wellness perceptions between student-athletes and non-athletes at multiple institutions and differing levels of collegiate competition may also help to identify potential differences in environment, training methodology, program expectations, and

other variable factors that may influence perceptions of wellness for student-athletes in comparison to non-athletes. Likewise, including major revenue and high contact sports such as football, basketball, and ice hockey may indeed be important given the nature of performance pressure, physical demand, and injury. Moreover, future research should invest in examining potential intervention strategies for creating awareness and improvement of wellness perceptions among college student-athletes.

As it relates to perceived stress, the finding of no significant difference in perceived stress between student-athletes and non-athletes in the current study is in need of further examination. Continued research will be important to give more consistent results on whether college student-athletes are likely to perceive more stress than non-athletes, or if there are no significant differences between groups. Likewise, examining stress scores during in-season and off-season periods may offer considerable advantages into understanding the impact of sport participation on perceived stress for student-athletes. Moreover, the addition of qualitative research will allow for both student-athletes and non-athletes to describe their perceptions, experiences, and sources of their stressors. Specific differences between the groups can then be teased out and categorized, thus aiding in the development of coping and/or treatment strategies, particularly for student-athletes and any unique types of stressors they may encounter compared to non-athletes. Although coping and treatment rationale were not research variables for the current study, it is nonetheless important to mention for future studies to consider.

While social support has been extensively studied, comparisons between college student-athletes and non-athletes do warrant deeper analysis. Specifically, student-athlete satisfaction of social support from college friends is of interest. It may be important to understand the nature of relationships that student-athletes have with student-athletes on other teams as well as non-

athlete students. Additionally, examination of support from health-related professionals to both student-athletes and non-athletes will be helpful in analyzing the effectiveness of social support being provided by university athletic and general student population departments. Moreover, the lack of significant findings for the effect of social support on perceived wellness and stress in the non-athlete group should be further examined. It is important to understand whether this finding was a result of the current participant pool, or if there is a common trend in the lack of social support satisfaction among non-athlete college students. Finally, a continued investigation into how demographic factors influence perceived wellness, perceived stress, and social support might aid in understanding personal, cultural, and situational differences that could account for differences among college student-athletes and non-athletes.

Conclusion

The current study aimed to explore perceived wellness, perceived stress, and social support among college student-athletes and non-athletes. The overall findings as to the state of health and wellness among student-athletes supported current literature (Simon & Docherty, 2014; Watson & Kissinger, 2007) that wellness perceptions among college student-athletes are lower than non-athletes. However, the current study did reveal that when compared to general population standards, both student-athlete and non-athlete wellness was not clinically relevant. That is, both groups reported a general positive state of wellness when compared to population norms. While no differences were shown between student-athletes and non-athletes for perceived stress, and student-athletes showed higher social support satisfaction than non-athletes, overall perceptions of wellness were still lower for student-athletes. The results of this current study are limited to one sample located at one university, and should be interpreted with care.

APPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL FORM

MICHIGAN STATE UNIVERSITY

Initial IRB Application Determination *Exempt*

October 2, 2014

To: Tracey Covassin
105 IM Sports Circle

Re: **IRB# x14-978e** Category: Exempt 2
Approval Date: October 2, 2014

Title: EXAMINING THE PERCEPTIONS OF WELLNESS, STRESS, AND SOCIAL SUPPORT AMONG COLLEGIATE STUDENT-ATHLETES AND NON-ATHLETES

The Institutional Review Board has completed their review of your project. I am pleased to advise you that **your project has been deemed as exempt** in accordance with federal regulations.

The IRB has found that your research project meets the criteria for exempt status and the criteria for the protection of human subjects in exempt research. **Under our exempt policy the Principal Investigator assumes the responsibilities for the protection of human subjects** in this project as outlined in the assurance letter and exempt educational material. The IRB office has received your signed assurance for exempt research. A copy of this signed agreement is appended for your information and records.

Renewals: Exempt protocols do not need to be renewed. If the project is completed, please submit an ***Application for Permanent Closure***.

Revisions: Exempt protocols do not require revisions. However, if changes are made to a protocol that may no longer meet the exempt criteria, a new initial application will be required.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to the human subjects and change the category of review, notify the IRB office promptly. Any complaints from participants regarding the risk and benefits of the project must be reported to the IRB.

Follow-up: If your exempt project is not completed and closed after three years, the IRB office will contact you regarding the status of the project and to verify that no changes have occurred that may affect exempt status.

Please use the IRB number listed above on any forms submitted which relate to this project, or on any correspondence with the IRB office.

Good luck in your research. If we can be of further assistance, please contact us at 517-355-2180 or via email at IRB@msu.edu. Thank you for your cooperation.

Sincerely,

Ashir Kumar, M.D.
BIRB Chair

c: Bryan Crutcher

Office of Regulatory Affairs
Human Research Protection Programs

Biomedical & Health Institutional Review Board (BIRB)

Community Research Institutional Review Board (CRIRB)

Social Science Behavioral/Education Institutional Review Board (SIRB)

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APPENDIX B

DEMOGRAPHIC SURVEY

1) What is your current age? _____

2) Gender:
   a) Male
   b) Female

3) Please select the race that best describes you:
   a) Caucasian/White
   b) African/African-American/Black
   c) Hispanic/Latin-American
   d) American Indian/Eskimo
   e) Asian (including Hawaiian and Pacific Islander)
   f) 2 or more races
   g) Prefer not to report
   h) Other _____

4) What is your major? _____

5) What is your current class year?
   a) Freshman
   b) Sophomore
   c) Junior
   d) Senior
   e) 5th year Senior
   f) 6th year Senior
   g) more than 6 years in undergraduate

6) How many credits are you currently taking this semester? _____

7) Are you a current collegiate athlete participating on a varsity team?
   a) Yes
   b) No

8) Please indicate what varsity sport(s) you currently participate in?

   _____
   *(if you answered **NO** to Question 7, please leave this question blank)

9) If you are **NOT** a current varsity athlete, do you currently participate in an intramural or club sport? *(If you **ARE** a varsity athlete, please leave this question blank).
   a) Yes
   b) No

10) Please indicate your current scholarship status.
   a) Full athletic scholarship
   b) Partial athletic scholarship
   c) Full academic scholarship
   d) Partial academic scholarship
   e) No athletic or academic scholarship

11) Please indicate on average, how many hours a week you currently devote to sport, either varsity sport **OR** intramural/club sport? (This includes practice, film, weight lifting, conditioning, and team meetings).

_____

12) Please indicate on average, how many hours a week you currently devote to your job. *(if you do **NOT** work, please put "0").

_____

13) Please write the number of injuries and surgeries you have had for each category of injury during your collegiate career only in the table below.

If you haven't had any injury/surgery for that category, please write "0"

	Number of Injuries	Number of Surgeries
1-7 Days Missed "Minor"		
8-21 Days Missed "Moderate"		
22 or more days Missed "Severe"		

Please indicate the approximate month and year of your last overall injury regardless of category.

_____ **(leave blank if it does not apply)

Please indicate the approximate month and year of your last overall surgery regardless of category.

_____ **(leave blank if it does not apply)

APPENDIX C

PROMIS SURVEY

PROMIS–29 Profile v2.0

Please respond to each question or statement by marking one box per row.

	Physical Function	**Without any difficulty**	**With a little difficulty**	**With some difficulty**	**With much difficulty**	**Unable to do**
1	Are you able to do chores such as vacuuming or yard work?	☐	☐	☐	☐	☐
2	Are you able to go up and down stairs at a normal pace?	☐	☐	☐	☐	☐
3	Are you able to go for a walk of at least 15 minutes?	☐	☐	☐	☐	☐
4	Are you able to run errands and shop?	☐	☐	☐	☐	☐
	Anxiety **In the past 7 days…**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
5	I felt fearful	☐	☐	☐	☐	☐
6	I found it hard to focus on anything other than my anxiety	☐	☐	☐	☐	☐
7	My worries overwhelmed me	☐	☐	☐	☐	☐
8	I felt uneasy	☐	☐	☐	☐	☐
	Depression **In the past 7 days...**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
9	I felt worthless	☐	☐	☐	☐	☐
10	I felt helpless	☐	☐	☐	☐	☐
11	I felt depressed	☐	☐	☐	☐	☐
12	I felt hopeless	☐	☐	☐	☐	☐
	Fatigue **During the past 7 days…**	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
13	I feel fatigued	☐	☐	☐	☐	☐
14	I have trouble starting things because I am tired	☐	☐	☐	☐	☐

PROMIS–29 Profile v2.0

	Fatigue **In the past 7 days…**	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
15	How run-down did you feel on average? ...	☐	☐	☐	☐	☐
16	How fatigued were you on average?	☐	☐	☐	☐	☐
	Sleep Disturbance **In the past 7 days…**	**Very poor**	**Poor**	**Fair**	**Good**	**Very good**
17	My sleep quality was.....	☐	☐	☐	☐	☐
	In the past 7 days…	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
18	My sleep was refreshing.....	☐	☐	☐	☐	☐
19	I had a problem with my sleep	☐	☐	☐	☐	☐
20	I had difficulty falling asleep	☐	☐	☐	☐	☐
	Ability to Participate in Social Roles and Activities	**Never**	**Rarely**	**Sometimes**	**Usually**	**Always**
21	I have trouble doing all of my regular leisure activities with others.....	☐	☐	☐	☐	☐
22	I have trouble doing all of the family activities that I want to do	☐	☐	☐	☐	☐
23	I have trouble doing all of my usual work (include work at home)	☐	☐	☐	☐	☐
24	I have trouble doing all of the activities with friends that I want to do	☐	☐	☐	☐	☐
	Pain Interference **In the past 7 days…**	**Not at all**	**A little bit**	**Somewhat**	**Quite a bit**	**Very much**
25	How much did pain interfere with your day to day activities?.....	☐	☐	☐	☐	☐
26	How much did pain interfere with work around the home?	☐	☐	☐	☐	☐
27	How much did pain interfere with your ability to participate in social activities? .	☐	☐	☐	☐	☐
28	How much did pain interfere with your household chores?	☐	☐	☐	☐	☐

PROMIS–29 Profile v2.0

Pain Intensity

In the past 7 days…

29	How would you rate your pain on average?.....	☐ 0 **No pain**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10 **Worst imaginable pain**

APPENDIX D

PERCEVIED STRESS SCALE

INSTRUCTIONS: The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by marking the circle representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
Never Almost Never Sometimes Fairly Often Very Often

2. In the last month, how often have you felt that you were unable to control the important things in your life?
Never Almost Never Sometimes Fairly Often Very Often

3. In the last month, how often have you felt nervous and "stressed"?
Never Almost Never Sometimes Fairly Often Very Often

4. In the last month, how often have you dealt successfully with day to day problems and annoyances?
Never Almost Never Sometimes Fairly Often Very Often

5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
Never Almost Never Sometimes Fairly Often Very Often

6. In the last month, how often have you felt confident about your ability to handle your personal problems?
Never Almost Never Sometimes Fairly Often Very Often

7. In the last month, how often have you felt that things were going your way?
Never Almost Never Sometimes Fairly Often Very Often

8. In the last month, how often have you found that you could not cope with all the things that you had to do?
Never Almost Never Sometimes Fairly Often Very Often

9. In the last month, how often have you been able to control irritations in your life?
Never Almost Never Sometimes Fairly Often Very Often

10. In the last month, how often have you felt that you were on top of things?
Never Almost Never Sometimes Fairly Often Very Often

11. In the last month, how often have you been angered because of things that happened that were outside of your control?
Never Almost Never Sometimes Fairly Often Very Often

12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
Never Almost Never Sometimes Fairly Often Very Often

13. In the last month, how often have you been able to control the way you spend your time?
Never Almost Never Sometimes Fairly Often Very Often

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
Never Almost Never Sometimes Fairly Often Very Often

APPENDIX E

SOCIAL SUPPORT QUESTIONNAIRE

Please check the circle next to the individual that provides you with support (you may select more then one individual).

Then please circle the number to indicate your satisfaction of the support they provide, where 1 is very dissatisfied and 6 is very satisfied.

1. Whom could you really count on to be dependable when you need help?

- o Family 1 2 3 4 5 6
- o High School Friends 1 2 3 4 5 6
- o College Friends 1 2 3 4 5 6
- o Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- o Health-Related Professional(s) 1 2 3 4 5 6
- o Other (please specify):_____ 1 2 3 4 5 6

2. Whom could you really count on to help you feel more relaxed when you are under pressure or tense?

- o Family 1 2 3 4 5 6
- o High School Friends 1 2 3 4 5 6
- o College Friends 1 2 3 4 5 6
- o Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- o Health-Related Professional(s) 1 2 3 4 5 6
- o Other (please specify):_____ 1 2 3 4 5 6

3. Who accepted you totally, including both your worst and your best points?

- o Family 1 2 3 4 5 6
- o High School Friends 1 2 3 4 5 6
- o College Friends 1 2 3 4 5 6
- o Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- o Health-Related Professional(s) 1 2 3 4 5 6
- o Other (please specify):_____ 1 2 3 4 5 6

4. Whom could you really count on to care about you, regardless of what is happening to you?

- o Family 1 2 3 4 5 6
- o High School Friends 1 2 3 4 5 6
- o College Friends 1 2 3 4 5 6
- o Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- o Health-Related Professional(s) 1 2 3 4 5 6
- o Other (please specify):_____ 1 2 3 4 5 6

5. Whom could you really count on to help you feel better when you are feeling generally down in the dumps?

- o Family 1 2 3 4 5 6
- o High School Friends 1 2 3 4 5 6
- o College Friends 1 2 3 4 5 6
- o Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- o Health-Related Professional(s) 1 2 3 4 5 6
- o Other (please specify):_____ 1 2 3 4 5 6

6. Whom could you count on to console you when you are very upset?

- Family 1 2 3 4 5 6
- High School Friends 1 2 3 4 5 6
- College Friends 1 2 3 4 5 6
- Teammates (Varsity or Club Sports) 1 2 3 4 5 6
- Health-Related Professional(s) 1 2 3 4 5 6
- Other (please specify):_____ 1 2 3 4 5 6

REFERENCES

REFERENCES

Acton, G. J., & Malathum, P. (2000). Basic need status and health-promoting self-care behavior in adults. *Western Journal of Nursing Research, 22.7*, 796-811.

Adler, A. (1954). *Understanding human nature.* New York: Fawcett. (Original work published 1927).

Agel, J., Arendt, E. A., & Bershadsky, B. (2005). Anterior cruciate ligament injury in National Collegiate Athletic Association Basketball and Soccer: A 13-year review. *The American Journal of Sports Medicine, 33.4,* 524-530.

Albright, J., Powell J., & Martindale A. (2004). Injury patterns in Big Ten conference football. *American Journal of Sports Medicine, 32*(6), 1394-1404.

Andersen, M. B., & Williams, J. M. (1988). A Model of stress and athletic injury: Prediction and prevention. *Journal of Sport & Exercise Psychology, 10*, 294-306.

Anye, E. T., Gallien, T. L., Bian, H., & Moulton, M. The relationship between spiritual well-being and health-related quality of life in college students. *Journal of American College Health, 61.7,* 414-421.

Aoyagi, M. W., Burke, K. L.,Joyner, A. B., Hardy, C. J., & Hamstra, M. S. (2009). The associations of competitive trait anxiety and personal control with burnout in sport. *Athletic Insight: The Online Journal of Sport Psychology, 1*, 1-14.

Appaneal, R. N., Levine, B. R., Perna, F. M., & Roh, J. L. (2009). Measuring postinjury depression among male and female competitive athletes. *Journal of Sport & Exercise Psychology, 31*(1), 60-76.

Archer, J., Probert, B. S., & Gage, L. (1987). College students' attitudes toward wellness. *Journal of College Student Personnel, 28.4,* 311-317.

Benavides, A. D., & David, H. (2010). Local government wellness programs: A viable option to decrease healthcare costs and improve productivity. *Public Personnel Management, 39.4,* 291-306.

Berkman, L. F., & Syme, L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology, 109*(2), 186-204.

Bianco, T. (2001). Social support and recovery from sport injury: Elite skiers share their experiences. *Research Quarterly for Exercise and Sport, 72*(4), 376-388.

Birky, I. (2007). Counseling student athletes: Sport psychology as a specialization. In J. Lippincott & R. Lippincott (Eds.). *Special populations in college counseling: A handbook for mental health professionals* (pp. 21-36). Alexandria, VA: American Counseling Association.

Blair, S. N., & Morris, J. N. (2009). Healthy hearts - and the universal benefits of being physically active: Physical activity and health. *Annals of Epidemiology, 19*(4), 253-256.

Blann, F. W. (1985). Intercollegiate athletic competition and students' educational and career plans. *Journal of College Student Personnel, 26,* 115-118

Bouchard, L. C., & Shih, J. H. (2013). Gender differences in stress generation: Examination of interpersonal predictors. *Journal of Social and Clinical Psychology, 32*(4), 424-445.

Bray, S. R., & Born, H. A. (2004). Transition to university and vigorous physical activity: Implications for health and psychological well-being. *Journal of American College Health, 52*(4), 181-188.

Brewer, B. W., Linder, D. E., & Phelps, C. M. (1995). Situational correlates of emotional adjustment to athletic injury. *Clinical Journal of Sports Medicine, 5*(4), 241-245.

Brougham, R. R., Zail, C. M., Mendoza, C. M., & Miller, J. R. (2009). Stress, sex differences, and coping strategies among college students. *Current Psychology, 28*(2), 85-97.

Brown, D., & Blanton, C. (2002). Physical activity, sports participation, and suicidal behavior among college students. *Medicine & Science in Sports and Exercise*, *34*, 1087–1096.

Brown, R. D. (1986). Studying stress among student services professionals: An interactional approach. *NASPA Journal, 23.4,* 2-10.

Buckworth, J., & Nigg, C. (2004). Physical activity, exercise, and sedentary behavior in college students. *Journal of American College Health, 53*(1), 28-34.

Campbell, J.P., Maxey, V.A., & Watson, W.A. (1995). Hawthorne effect: Implications for Prehospital research. *Annals of Emergency Medicine, 26*(5), 590-594.

Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., Amtmann, D., et al. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. *Journal of Clinical Epidemiology, 63,* 1179-1194.

Chao, R. (2012). Managing perceived stress among college students: The roles of social support and dysfunctional coping. *Journal of College Counseling, 15*(1), 5-21.

Cogan, K. D., & Petrie, T. A. (1996). Consultation with college student-athletes. *College Student Journal*, *30*, 9-16.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 385-396.

Cohen, S. & Williamson, G. M. (1988). Perceived stress in a probability sample of the United States. In. S. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31-67). Newbury Park, CA: Sage

Cohen, S. & Williamson, G. M. (1991). Stress and infectious disease in humans. *Psychological Bulletin, 109*(1), 5-24.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Comeaux, E. (2011). Examination of faculty attitudes toward Division I college student-athletes. *College Student Affairs Journal, 30*(1), 75-87.

Corbillon, F., Crossman, J., & Jamieson, J. (2008). Injured athletes' perceptions of the social support provided by their coaches and teammates during rehabilitation. *Journal of Sport Behavior, 31*(2), 93-107.

Cosh, S., & Tully, P. J. (2014). "All I have to do is pass": A discursive analysis of student athletes' talk about prioritizing sport to the detriment of education to overcome stressors encountered in combining elite sport and tertiary education. *Psychology of Sport and Exercise, 15.2,* 180-189.

DeFreese, J. D., & Smith, A. L. (2013). Teammate social support, burnout, and self-determination in collegiate athletes. *Psychology of Sport and Exercise, 14,* 258-265.

DeRobertis, E. M. (2012). Catching up to Alfred Adler: Individual psychology reconsidered. *PsycCRITIQUES, 57.7*.

Dwyer, A. L., & Cummings, A. L. (2001). Stress, self-efficacy, social support, and coping strategies in college students. *Canadian Journal of Counselling, 35,* 208-220.

Eitzen, D. (2009). Fair and foul: Beyond the myths and paradoxes of sport. New York, NY: Rowman & Littlefield.

Etzel, E. F., Watson, J. C., Visek, A. J., & Maniar, S. D. (2006). Understanding and promoting college student-athlete health: Essential issues for student affairs professionals. *NASPA Journal, 43*(3), 518-546.

Evans, L., & Hardy, L. (1995). Sport injury and grief responses: A Review. *Journal of Sport & Exercise Psychology*, *17*, 227-245.

Fullerton, D. S. (2011). A collaborative approach to college and university student health and wellness. *New Directions for Higher Education, 153,* 61-69.

Gan, Q., & Anshel, M. H. (2009). Sources of acute stress among Chinese college athletes as a function of gender and skill level. *Journal of Sport Behavior, 32*(1), 36-52.

Gould, D., Udry, E., Bridges, D., & Beck, L. (1997). Coping with season ending injuries. *The Sport Psychologist, 11*, 379-399.

Gieck, D. J., & Olsen, S. (2007). Holistic wellness as a means to developing a lifestyle approach to health behavior among college students. *Journal of American College Health, 56(*1), 29-35.

Hale, C. J., Hannum, J. W., & Espelage, D. L. (2005). Social support and physical health: The importance of belonging. *Journal of American College Health, 53*(6), 276-284.

Hanson, S. J., McCullah, P., & Tonymon, P. (1992). The relationship of personality characteristics, Life stress, and coping resources to athletic injury. *Journal of Sport & Exercise Psychology, 14,* 262-272.

Hardy, C. J., Burke, K. L., & Crace, R. K. (1999). Social support and injury: A framework for social support-based interventions with injured athletes. In D. Pargman (Ed.), *Psychological bases of sport injuries* (2nd ed., pp. 175-198). Morgantown, WV: Fitness Information Technology.

Hardy, C. J. & Crace, R. K. (1993). The dimensions of social support when dealing with sport injuries. In D. Pargman (Ed*.), Psychological bases of sport injuries* (pp. 121-144). Morgantown, WV: Fitness Information Technology.

Hardy, C. J., & Riehl, R. E. (1988). An examination of the life-stress injury relationship among noncontact sport participants. *Behavioral Medicine, 14*(3), 113-118.

Harris, A. H. S., Cronkite, R., Moos, R. (2006). Physical activity, exercise coping, and depression in a 10-year cohort study of depressed patients. *Journal of Affective Disorders, 93.1-3*, 79-85.

Hattie, J. A., Myers, J. E., & Sweeney, T. J. (2004). Factor structure of wellness: Theory, assessment, analysis, and practice. *Journal of Counseling & Development, 82*, 355-364.

Hawkins, C. A., Hawkins, R. C., Smith, M. L., & Grant, D. (2005). The relationships among hours employed, perceived work interference, and grades as reported by undergraduate social work students. *Journal of Social Work Education, 41*, 1327.

Hefner, J., & Eisenberg, D. (2009). Social support and mental health among college students. *American Journal of Orthopsychiatry, 79*(4), 491-499.

Heintzman, P. (2002). A conceptual model of leisure and spiritual well-being. *Journal of Park and Recreation Administration, 20*(4), 147-169.

Hermon, D. A., & Hazler, R. J. (1999). Adherence to a wellness model and perceptions of psychological well-being. *Journal of Counseling and Development, 77*(3), 339-343.

Hettler, B. (1980). Wellness promotion on a university campus: Family and community health. *Journal of Health Promotion and Maintenance, 3,* 77–95.

Hudd, S. S., Dumlao, J., Erdmann-Sager, D., Murray, D., Phan, E., Soukas, N., & Yokozuka, N. (2000). Stress at college. Effects on health habits, health status, and self-esteem. *College Student Journal, 34*(2), 217-227.

Ivanova, L. I. U. (2014). Russia's college students: Work and health. *Russian Education and Society 56*(1), 34-46.

Jackson, E. S., Tucker, C. M., & Herman, K. C. (2007). Health value, perceived social support, and health self-efficacy as factors in a health promoting lifestyle. *Journal of American College Health, 56*(1), 69-74.

Jones, D. H., Harel, Y., & Levinson, R. M. (1992). Living arrangements, knowledge of health risks, and stress as determinants of health-risk behavior among college students. *Journal of American College Health, 41*, 43–48

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

Kobasa, S. C. (1982). Commitment and coping in stress resistance among lawyers. *Journal of Personality and Social Psychology, 42,* 707-717.

Kucera, M. (1994). Osteoporosis and former athletes. *Sbornik Lekarsky, 95,* 105-109.

Kuehl, M. D., Snyder, A. R., Erickson, S. E., & Valovich-McLeod, T. C. (2010). Impact of prior concussions on health-related quality of life in collegiate athletes. *Clinical Journal of Sport Medicine, 20*(2), 86-91.

LaFountaine, J. (2009) Student athlete wellness gender perspectives, Journal of Coaching Education, 2, (2).

LaFountaine, J., Neisen, M., & Parsons, R. (2006). Wellness factors in first year college students. *American Journal of Health Studies, 21*(4), 214-220.

Largo-Wright, E., Peterson, P. M., & Chen, W. W. (2005). Perceived problem solving, stress, and health among college students. *American Journal of Health Behavior, 29*(4), 360-370.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14,* 229–252.

Lee, S., Blake, H., & Lloyd, S. (2010). The price is right: Making workplace wellness financially sustainable. *International Journal of Workplace Health Management, 3*(1), 58-69.

Leibin, V. M. (1981). Adler's concept of man. *Journal of Individual Psychology, 37*(1), 3-4.

Leddy, M. H., Lambert, M. J., & Ogles, B. M. (1994). Psychological consequences of athletic injury among high-level competitors. *Research Quarterly for Exercise & Sport, 65*(4), 347-354.

Li, Y., & Lindsey, B. J. (2013). An association between college students' health promotion practices and perceived stress. *College Student Journal, 47*(3), 437-446.

Lockwood, P., & Wohl, R. (2012). The impact of a 15-week lifetime wellness course on behavior change and self-efficacy in college students. *College Student Journal, 46*(3), 628-641.

Lohmander L., Ostenberg A., Englund M., & Roos H. (2004). High prevalence of knee osteoarthritis, pain, and functional limitations in female soccer players twelve years after anterior cruciate ligament injury. *Arthritis & Rheumatology, 50*(10), 3145-3152.

Lu, F. J. H., & Yawen, H. (2013). Injured athletes' rehabilitation beliefs and subjective well-being: The contribution of hope and social support. *Journal of Athletic Training, 48*(1), 92-98.

Malinauskas, R. (2010). The associations among social support, stress, and life satisfaction as perceived by injured college athletes. *Social Behavior & Personality, 38*(6), 741-752.

McAllister, D. R., Motamedi, A. R., Hame, S. L., Shaprio, M. S., & Dorey, F. J. (2001). Quality of life assessment in elite collegiate athletes. *American Journal of Sports Medicine, 29*(6), 806–810.

McCombs, M. (2012). Civic osmosis: The social impact of media. *Comunicacion Y Sociedad, 1*, 7-14.

McCormick, J., & Lockwood, P. (2006). College student perception of wellness courses. *The Physical Educator, 2,* 78-103

Medic, N., Mack, D. E., Wilson, P. M., & Starkes, J. L. (2007). The effects of athletic scholarship on motivation in sport. *Journal of Sport Behavior, 30*(3), 292–306.

Misra, R., McKean, M., West, S., & Russo, T. (2000). Academic stress of college students: Comparison of student and faculty perceptions. *College Student Journal, 34*(2), 236-245.

Myers, J. E. (1998). *Manual for the Wellness Evaluation of Lifestyle.* Palo Alto, CA: MindGarden.

Myers, J. E., Luecht, R. M., & Sweeney, T. J. (2004). Examining the Five-Factor Wel Inventory: Results of an exploratory factor analysis. *Journal of Counseling and Development, 36*(4), 194-209.

Myers, J. E., & Mobley, A. K. (2004). Wellness of undergrads: Comparisons of traditional and non-traditional students. *Journal of College Counseling, 7*(1), 40-49.

Myers, J. E., Mobley, A. K., & Booth, C. S. (2003). Wellness counseling students: Practicing what we preach. *Counselor Education and Supervision, 42,* 264–274.

Myers, J. E. & Sweeney, T. J. (1999). *The Five Factor Wel (WEL-J).* Greensboro, NC: Author.

Myers, J. E. & Sweeney, T. J. (2004). The Indivisible-Self: An evidence-based model of wellness. *Journal of Individual Psychology, 61*(3), 269-279.

Myers, J. E. & Sweeney, T. J. (2005). The Indivisible-Self: An evidence-based model of wellness. *Journal of Individual Psychology, 61*(3), 269-279.

Myers, J. E., & Sweeney, T. J. (2007). Wellness in counseling: An overview (ACAPCD-09). Alexandria, VA: American Counseling Association.

Myers, J. E. & Sweeney, T. J. (2008). Wellness counseling: The evidence base for practice. *Journal of Counseling and Development, 86*(4), 482-493.

Myers, J. E., Witmer, J. M., & Sweeney, T. J. (1996). *The Wellness Evaluation of Lifestyle.* Palo Alto, CA: Mindgarden.

Myers, J. E., Sweeney, T. J., & Witmer, J. M. (2000). The Wheel of Wellness counseling for wellness: A holistic model for treatment planning. *Journal of Counseling and Development, 78*(3), 251-266.

National Wellness Institute (2014, April 10). Hettler's Model of Wellness. Retrieved from http://www.nationalwellness.org

Nelms, L. W., Hutchins, E., Hutchins, D., & Pursley, R. J. (2007). Spirituality and the health of college students. *Journal of Religion and Health, 46*, 249-265.

Nideffer, R.M. (1983). The injured athlete: Psychological factors in treatment. In R.S. Weinberg & D. Gould, *Foundations of Sport and Exercise Psychology* (3rd ed., p. 401). Champaign, IL: Human Kinetics.

North, T. C., McCullagh, P., & Tran Z. V. (1990). Effect of exercise on depression. *Exercise and Sport Sciences Reviews, 18,* 379-415.

O'Leary, A. (1990). Stress, emotion, and human immune function. *Psychological Bulletin, 108*(3), 363-382.

Overholser, J. C. (2010). Psychotherapy that strives to encourage social interest: A simulated interview with Alfred Adler. *Journal of Psychotherapy Integration, 20*(4), 347-363.

Park, C. L, Armeli, S., & Tennen, H. (2004). The daily stress and coping process and alcohol use among college students. Journal of studies on alcohol and drugs, 65(1), 126-135.

Patterson, E. L., Smith, R. E., Everett, J. J., & Ptacek, J. T. (1998). Psychosocial factors as predictors of ballet injuries: Interactive effects of life stress and social support. *Journal of Sport Behavior, 21*(1), 101-112.

Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behavior, 30,* 241-256.

Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry, 18.2,* 189-193.

Petrie, T.A. (1993). Coping skills, competitive trait anxiety and playing status: Moderating effects on the life stress-injury relationship. *Journal of Sport & Exercise Psychology*, *15*, 261-274.

Pinkerton, R. S., Hinz, L. D., & Barrow, J. C. (1989). The college student-athlete: Psychological considerations and interventions. *Journal of American College Health, 37.5,* 218-226.

Powell, J. W., & Barber-Foss, K. D. (1999). Injury patterns in selected high school sports: A review of the 1995-1997 seasons. *Journal of Athletic Training, 34*(3), 277-284.

Preston, D. B, Green, G. W, & Irwin, P. A. (1990). An assessment of college health nursing practice: a wellness perspective. *Journal of Community Health Nursing, 7,* 97–104.

Rachele, J. N., Washington, T. L., Cuddihy, T. F., Barwais, F. A., & McPhail, S. M. (2013). Valid and reliable assessment of wellness among adolescents: Do you know what you're measuring? *International Journal of Wellbeing, 3*(2), 162-172.

Rash, C. L., Malinauskas, B. M., Duffrin, M. W., Barber-Heidal, K., & Overton, R.F. (2008). Nutrition-related knowledge, attitude, and dietary intake of college track athletes. *Sport Journal, 11*(1), 48-54.

Rawson, H. E., Bloomer, K., & Kendall A. (1994). Stress, anxiety, depression, and physical illness in college students. *The Journal of Genetic Psychology, 155*(3), 321-330.

Richmond, C. A. M., Ross, N. A., & Egeland, G. M. (2007). Social support and thriving health: A new approach to understanding the health of indigenous Canadians. *American Journal of Public Health, 97*(9), 1827-1833.

Robbins, G. C., Powers, D., & Rushton, J. (1992). Assessment outcomes confirm the value of a university's required fitness/wellness courses. *Journal of Physical Education, Recreation & Dance*, *63*, 17-21.

Roberti, J. W., Harrington, L. N., & Storch, E. A. (2006). Further psychometric support for the 10-Item version of the Perceived Stress Scale. *Journal of College Counseling, 9*(2), 135-147.

Rothrock, N. E., Hays, R. D., Spritzer, K., Yount, S. E., Riley, W., & Cella, D. (2010). Relative to the general US population, chronic diseases are associated with poorer health-related quality of life as measured by the Patient-Reported Outcomes Measurement Information System (PROMIS). *Journal of Clinical Epidemiology, 63,* 1195-1204.

Ruthig, J. C., Haynes, T. L., Stupnisky, R. H., & Perry, R. P. (2009). Perceived academic control: Mediating the effects of optimism and social support on college students' psychological health. *Social Psychology of Education, 12,* 233-249.

Rosenfeld, L. B., Richman, J. M., & Hardy, C .J. (1989). Examining social support networks among athletes: Description and relationship to stress. *The Sport Psychologist, 3,* 23-33.

Royal, M. A., & Rossi, R. J. (1993). A comparative approach to assessing the quality of life of intercollegiate athletes. *Social Indicators Research, 29*(3), 317-330.

Sarason, B. R., Sarason, I. G., & Pierce, G. R. (1990). *Social support: An interactional view*. New York, NY: John Wiley & Sons.

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships, 4*, 497-510.

Sibold, J., & Zizzi, S. (2012). Psychosocial variables and time to injury onset: A hurdle regression analysis model. *Journal of Athletic Training, 47*(5), 537-540.

Simon, J. E., & Docherty, C. L. (2014). Current health-related quality of life is lower in former division I collegiate athletes than in non-collegiate athletes. *American Journal of Sports Medicine, 42*, 423-429.

Srivastava, S. K., & Barmola, K. C. (2012). Social support and adjustment of students. *Social Science International, 28*(2), 303-317.

Stewart, A. L., Hays, R. D., Wells, K. B., Rogers, W. H., Spritzer, K. L., & Greenfield, S. (1994). Long-term functioning and well-being outcomes associated with physical activity and exercise in patients with chronic conditions in the medical outcomes study. *Journal of Clinical Epidemiology, 47*(7), 719-730.

Stilger, V., Etzel, E., & Lantz, C. (2001). Life-stress sources and symptoms of collegiate student-athletic trainers over the course of an academic year. *Journal of Athletic Training, 36*(4), 401-407

Sweeney, T., *&* Witmer, J. M. (1991). Beyond social interest: Striving toward optimum health and wellness. *Individual Psychology 47,* 527-540.

Thoits, P. A. (1986). Social support and coping assistance. *Journal of Counseling and Clinical Psychology*, *54*(4), 416-423.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of Health and Social Behavior, (Extra Issue),* 53-79.

Tracey, J. (2003). The emotional response to the injury and rehabilitation process. *Journal of Applied Sport Psychology*, 15, 279-293.

Turner-Bowker, D. M., Saris-Baglama, R. N., & DeRosa, M. A. (2013). Single-item electronic administration of the SF-36v2 Health Survey. *Quality of Life Research, 22,* 485-490.

Uchino, B. N. (2004). *Social support and physical health: Understanding the health consequences of relationships*. New Haven, CT: Yale University Press.

Udry, E., Gould, D., Bridges, D., & Tuffey, S. (1997). People helping people? Examining the social ties of athletes coping with burnout and injury stress. *Journal of Sport & Exercise Psychology*, *19*, 368-395.

Valovich-McLeod, T. C., Bay, R. C., Parsons, J. T., Sauers, E. L. & A. R. Snyder. (2009). Recent injury and health-related quality of life in adolescent athletes. *Journal of Athletic Training, 44*(6), 603–610.

VanKim, N. A., & Nelson, T. F. (2013). Vigorous physical activity, mental health, perceived stress, and socializing among college students. *American Journal of Health Promotion, 28*(1), 7-15.

VanRensburg, C. J., Surujlal, J., & Dhurup, M. (2011). Exploring wellness practices and barriers: A qualitative study of university student-athletes. *African Journal for Physical, Health Education, Recreation and Dance, 17*(2), 248-265.

Vaughan, W. F. (1927). The psychology of Alfred Adler. *The Journal of Abnormal and Social Psychology, 21,* 358-371.

Wang, C. C., & Castaneda-Sound, C. (2011). The role of generational status, self-esteem, academic self-efficacy, and perceived social support in college students' psychological well-being. *Journal of College Counseling, 11*(2), 101-118.

Ware, J.E. (1988). *How to score the revised MOS Short-Form health scales*. Boston Institute for the Improvement of Medical Care and Health, New England Medical Center.

Ware, J. E., & Kosinski, M. (1996). *SF-36 Health Survey (Version 2.0)* (Technical note, September 20). Boston: Health Assessment Lab.

Ware, J. E., Kosinksi, M, Bjorner, J. B., Turner-Bowker, D. M., Gandek, B., Maruish, M. E. (2008). User's manual for the SF-36v2 Health Survey (2nd ed.). Lincoln, RI: QualityMetric Incorporated.

Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-item Short-Form Health Survey (SF-36). Conceptual framework and understanding. *Medical Care, 30*(6), 473-483.

Warren, L., Wrigley, J. M., Yoels, W. C., & Fine, P. R. (1996). Factors association with life satisfaction among a sample of persons with neurotrama. *Journal of Rehabilitation Research and Development, 33*(4), 404-408.

Watson, J. C., & Kissinger, D. B. (2007). Athlete participation and wellness: Implications for counseling college student-athletes. *Journal of College Counseling, 10*(2), 153-162.

Westgate, C. E. (1996). Spiritual wellness and depression. *Journal of Counseling and Development, 75*(1), 26-35.

Williams, J. M., & Andersen, M. B. (1998). Psychosocial antecedents of sport injury: Review and critique of the Stress and Injury Model. *Journal of Applied Sport Psychology, 10*, 5-25.

Williams, J. M., Tonymon, P., & Wadsworth, W. A. (1986). Relationship of life stress to injury in intercollegiate volleyball. *Journal of Human Stress, 12*(1), 38-43.

Wilson, G., & Pritchard, M. (2005). Comparing sources of stress in college student-athletes and non-athletes. *Athletic Insight: The Online Journal of Sport Psychology, 7.1,*1-8.

Witmer, J. M., & Sweeney, T. (1992). A holistic model for wellness and prevention over the lifespan. *Journal of Counseling and Development, 71,* 140-148.

Wolf-Wendel, L., Toma, J. D., & Morphew, C. C. (2001). There's no "I" in "Team": Lessons from athletics on community building. *The Review of Higher Education, 24*(4), 369-396.

World Health Organization (2014, April 1). Definition of wellness. Retrieved from http://www.who.int/en/

Yang, J., Peek-Asa, C., Lowe, J. B., Heiden, E., & Foster, D. T. (2010). Social support patterns of collegiate athletes before and after injury. *Journal of Athletic Training, 45,* 372-379.

Yorgason, J. B., Linville, D., & Zitman, B. (2008). Mental health among college students: Do those who need services know about them? *Journal of American College Health, 57*(2), 173-181.