SOCIAL CONNECTEDNESS, SELF-ESTEEM, AND DEPRESSION

SYMPTOMATOLOGY AMONG COLLEGIATE ATHLETES

VERSUS NON-COLLEGIATE ATHLETES AGES 18 TO 24:

A COMPARATIVE STUDY

A DISSERTATION

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BY

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DEDICATION

I dedicate this dissertation to my husband, Brad Armstrong, who has been my constant source of strength, encouragement, and love. Brad has persevered through my three years of doctoral studies, and our three years of marriage. He has always been patient with my passion for higher education and has supported me throughout its highs and lows. He sacrificed his priorities to drive me to Denton and spent days on campus for two semesters of courses I would not have been able to attend otherwise. He made the dinners, ran the errands, and always had the right words to soothe the soul. I love you Brad and thank you for everything you have done for me to help make my doctoral graduation dreams come true.

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ABSTRACT

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High rates of depression have been identified on college campuses. Although

collegiate athletes are considered a high-risk subculture for a variety of health behaviors

that associate with symptoms of depression, research is limited on depression in

collegiate athletes. The present study examined differences between athlete status and

gender on perceived levels of social connectedness, self-esteem, and depression among a

convenience sample of college students. Two hundred and twenty-seven participants

were systematically surveyed using the Center for Epidemiologic Studies Depression

Scale (CES-D), the Rosenberg Self-Esteem Scale (RSES), and the Social Connectedness

Scale Revised (SCS-R). College students were examined on their athlete status, gender,

grade point average (GPA), body mass index (BMI), and levels of weekly exercise, sleep,

social connectedness, and self-esteem associated with depression symptomatology.

Overall, the present study found a significant level of depression in this cohort of college

students, ages 18 to 24. Pearson's Product Moment Correlations revealed statistically

significant relationships between social connectedness, self-esteem, and depression.

Two-way multivariate analyses of variance (MANOVA) indicated collegiate athletes had

significantly greater levels of self-esteem and social connectedness than non-collegiate athletes. Collegiate athletes also had significantly lower levels of depression than non-collegiate athletes. However, stepwise multiple regressions revealed that athlete status was not a statistically significant predictor of depression when compared to the variables gender, self-esteem, social connectedness, and sleep. This study adds to the undeveloped area of research within the empirical knowledge base regarding depression among collegiate athletes. The results of this study will better assist health educators by identifying depression-related risk and protective factors, and prevalence data in order to form collaborative and prioritized campus health initiatives.

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CHAPTER I

INTRODUCTION

Rationale

On American college campuses, collegiate athletes are considered a high-risk subculture for a variety of health behaviors, including alcohol use and abuse, disordered eating, coping with the stressors of injuries and academic performance, overtraining, lack of sleep, and feelings of exhaustion (Etzel, Watson, Visek & Maniar, 2006; Nattiv, Puffer, & Green, 1997; Selby, Weinstein & Bird, 1990). Many of these variables have been shown to correlate directly with depression (Wells, Kataoka & Asarnow, 2001). Although preliminary data identifies that athletes do experience intense pressure and anxiety (Damm & Murray, 1996) and may be at similar or higher risk for depression than their peers (Maniar, Chamberlain, & Moore, 2005), research is limited on depression among collegiate athletes (Etzel, Watson, Visek & Maniar, 2006). Collegiate athletes may actually be protected from depression due to lifestyles that revolve around regular exercise (Martinsen, 1990; North, McCullagh, & Tran, 1990), increased self-esteem (Dishman et al., 2006), and social support and connectedness (Williams & Galliher, 2006). Cross-sectional studies show that people who are physically active are three times less likely to suffer from depression than inactive individuals, and that depressive symptoms decrease with increasing levels of physical activity (Morgan, 2000; Stephens, 1988; Weyerer, 1992). Furthermore, people who are more socially connected report less

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psychological distress, including depression and low self-esteem, than people less connected (Baumeister & Leary, 1995). The limited research on the overall health and well-being of collegiate athletes is inconsistent (Aries, McCarthy, Salovey, & Banaji, 2004). The gaps in the literature identify that depression among collegiate athletes is an understudied health issue.

<div align="center">Purpose of the Study</div>

The purpose of this study was to determine if there are significant differences between collegiate athletes versus non-collegiate athletes, female college students versus male college students, and the interaction between athlete status and gender on social connectedness, self-esteem, and depression scores. The secondary purpose was to determine if the variables of gender and athlete status and the interaction between the two with the other variables of Grade Point Average (GPA), levels of weekly exercise, self-esteem, and social connectedness are predictors of depression. The third purpose of this study was to assess the prevalence of depression among collegiate athletes ages 18-24, who attend Centenary College of Louisiana.

<div align="center">Null Hypotheses</div>

1. There will be no statistically significant relationships between self-esteem, social connectedness, and depression scores among college students ages 18 to 24 attending Centenary College.

2. There will be no statistically significant differences in self-esteem, social connectedness, and depression scores between collegiate athletes versus non-collegiate athletes and between female versus male college students ages 18 to 24 attending Centenary College, nor an interaction between athlete status and gender.

3. GPA, levels of weekly exercise, gender, athlete status, self-esteem, and social connectedness will not be statistically significant predictors of depression in college students ages 18 to 24 attending Centenary College.

Delimitations

This study had the following delimitations:

1. Only students enrolled in full-time, undergraduate coursework at Centenary College of Louisiana, during the 2007 spring semester, were considered as participants of the study.

2. Only students who volunteered and fully completed the surveys during data collection (March 20 through March 24, 2007) were considered as participants of the study.

3. Only collegiate athletes participating in the following sports at Centenary College of Louisiana were considered as participants of the study: basketball, baseball, cross country, golf, gymnastics, soccer, softball, swimming, tennis, and volleyball.

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Limitations

This study had the following limitations:

1. A volunteer sample was utilized to survey participants in the study and the data was collected in the cafeteria at Centenary College of Louisiana. The results reflect this campus' student population and cannot be generalized to college students or collegiate athletes nationally.

2. The data collected relied on self-report survey instruments.

3. Since the study was cross-sectional, the variables under study could have been influenced by time (e.g. feelings of the moment).

Assumptions

In this study, the following assumptions were made:

1. Students participating in the study responded truthfully and comprehensively to the questions in the survey instruments.

2. Students were able to read and write English and to fully comprehend the questions in the survey instruments.

Definitions of Terms

-   *College students*- Full-time, undergraduate students between the ages of 18-24 enrolled at Centenary College in Shreveport, Louisiana, during the 2007 spring semester.

-   *Collegiate Athletes*- Used interchangeably with student-athletes; College students at Centenary who participate in one or more hours of NCAA Division I athletics per day.

- *Depression-* The Diagnostic and Statistical Manual of Mental Disorder's (DSM-IV-TR) definiton of "being a state of intense sadness, melancholia or despair that has advanced to the point of being disruptive to an individual's social functioning and/or activities of daily living" (American Psychiatric Association, [APA] 2000).

- *Social Connectedness-* A psychological sense of belonging; experiencing a sense of closeness with others (Lee, Draper, & Lee, 2001).

- *Self-Esteem-* A sense of personal worthiness; being confident and competent and in one's abilities to achieve or cope with life challenges (Rosenberg, 1965).

Study Significance

The results of this study will add to the underdeveloped area of research within the empirical knowledge base regarding depression among collegiate athletes. This study will be useful to the college's mission statement and retention by identifying mental and social health impediments to learning, depression-related risk and protective factors, and prevalence data in order to form collaborative and prioritized campus health initiatives. Early detection, along with mental, emotional, and social health education and intervention strategies, may need to be customized according to gender and athlete status.

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CHAPTER II

REVIEW OF LITERATURE

The prevalence of depression among college students is increasing at an alarming rate in the United States. According to the results from a recent national annual survey by the American College Health Association (ACHA), 16% of college students reported being clinically depressed during the 2005 school year, and approximately 50% reported being so depressed at one point in their college career that they had trouble functioning (American College Health Association [ACHA], spring 2005). The current research on college students has identified a disquieting prevalence of depression in this unique population, most notably how it jeopardizes academic performance, school and life satisfaction, and social relationships (Backels & Wheeler, 2001; Hetligenstein, Guenther, Hsu, & Herman, 1996).

Within the college setting, a subset of students exist called collegiate athletes. Collegiate athletes are considered a "high-risk" subculture on American college campuses for a variety of health behaviors. Collegiate athletes must cope with the same college stressors their non-collegiate athlete peers face, but they must deal with the additional challenges of sport participation, which includes time management, travel and training loads, and excessive performance pressure and anxiety (Etzel, Watson, Visek, & Maniar, 2006). Therefore, collegiate athletes are thought to "face even more psychological and physical health problems than the average college student" (National

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Collegiate Athletic Association [NCAA], 2006a). Although preliminary data identifies that collegiate athletes may be at similar or higher risk for depression than their peers (Maniar, Chamberlain, & Moore, 2005), research on the overall health and well-being of collegiate athletes is inconsistent. The gaps in the literature indicate that depression among collegiate athletes is an understudied health issue.

<div align="center">Prevalence of Depression</div>

According to the World Health Organization (WHO), depression is one of the premier causes of disablement worldwide and is a significant contributor to the global burden of disease. Worldwide, depression is the second leading cause (next to ischemic heart disease) of "Disability Adjusted Life Years," or productive life lost to premature disability for both men and women, ages 15-44 (World Health Organization [WHO], 2006). In the United States, depression is also a substantial public health burden. It is the leading cause of disability for citizens ages 15-44 and is more prevalent among women (Le, Munoz, Ippen, & Stoddard, 2003; National Institute of Mental Health [NIMH], 2006). Approximately 50% of all medical visits are depression-related and 26% of Americans are newly diagnosed with depression or anxiety disorders each year. A few decades ago, the average age of onset of depression symptoms was 32 years of age, but recent data shows the average age of onset occurs between the ages of 15 and 24 years (NIMH, 2006), raising newfound concerns about the prevalence of childhood and adolescent depression. Child and adolescent depression has a recurring, erratic pattern and is linked to various damaging outcomes including alcohol, tobacco and drug abuse, academic challenges, high-risk sexual behaviors, physical and social impairments, and a

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30% increased risk of completed suicide (Birmaher et al., 1996; Le, Munoz, Ippen, & Stoddard, 2003).

The suicide rate among older teenagers is especially alarming. The most recent data from the Centers for Disease Control and Prevention cite that suicide rates have increased 18% (N= 1,985 deaths per year) for Americans under 20 years of age (Centers for Disease Control and Prevention [CDC], 2007). And according to the National Strategy for Suicide Prevention (2003), more adolescents die from suicide each year than collectively from the nation's leading chronic diseases: cancer, heart disease, AIDS, birth defects, stroke, pneumonia, and chronic lung disease.

Trends of Depression among College Students

In the U.S., the prevalence of depression among college students is also increasing at an alarming rate. In two recent national surveys of college and university counseling center directors, more than three-quarters (N=77.1%) reported concerns about mounting incidence rates of students with acute mental health problems (Gallagher, Gill, & Sysco, 2000; O'Malley, Wheeler, Murphey, O'Connell, & Waldo, 1990). These concerns have been substantiated. According to the results from the latest national annual survey by the ACHA, 16% of college students reported being clinically depressed during the 2005 school year, and approximately 50% reported being so depressed at one point in their college career that they had trouble functioning (ACHA, 2005). Compared to data collected in spring 2000, this number is up 6%, indicating an alarming increase in depression over a five year time period (ACHA, 2000).

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The results from a survey of suicide and depression, administered at four geographically and dimensionally different college campuses, also, identified that 53% of college students had experienced symptoms of depression since starting college. Grades, loneliness, and financial and relationship problems were the most frequently cited sources of depression among the sample of more than 1,400 students (Furr, Westefeld, McConnell, & Jenkins, 2001). In addition, school counselors at a large mid-western university observed increases in mental health disorders over time and employed researchers to examine the trends using 13 years of archived data that included a sample size of more than 13,000 students (Benton, Robertson, Tseng, Newton, & Benton, 2003). The results confirmed the suspicions: the number of students experiencing symptoms of depression had almost doubled over the course of time from 21.1% to 40.67%. The results also indicated significant increases in several other problem areas including stress and anxiety, developmental, relationship, physical and academic problems, and suicide (Benton, Robertson, Tseng, Newton, & Benton, 2003).

According to Kadison & DiGeronimo (2004), there are more than 1,000 suicides on college campuses each year. In the aforementioned study of suicide and depression in college students, 9% of participants responded "yes" to having contemplated suicide during their college years (Furr, Westefeld, McConnell, & Jenkins, 2001). This percentage is consistent with the ACHA's data, collected in spring 2005 among over 54,000 college students, which reported that 10.2% of the respondents "seriously considered attempting suicide" and 1.5% actually "attempted suicide" (ACHA, 2005).

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Severe depression is linked to suicide, which is recognized as the second leading cause of death for college students (Kadison & DiGeronimo, 2004).

The current research on college students has identified an alarming prevalence of depression in this unique population, most notably how it relates to academic performance, school and life satisfaction, and social relationships (Backels & Wheeler, 2001; Hetligenstein, Guenther, Hsu, & Herman, 1996). College is often referred to as the best time in a young person's life, but it is a profoundly transitional time for most adolescents: a time when "the process of identity development accelerates… [Unfortunately] too often leading to social disconnection, loneliness, lowered self-esteem, and depression" (Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006, p. 61).

College students frequently find it difficult to juggle various demands from academic, work, personal and social activities. These responsibilities and work loads are common sources of stress for college students, along with inconsistent sleeping and eating patterns and vacations and breaks (Ross, Niebling, & Heckert, 1999). Due to their ever-changing and unbalanced schedules, college students are documented as being most acutely affected by sleep difficulties when compared to other populations (Bubolz, Brown, & Soper, 2001; Jensen, 2003). College students are also acknowledged to be heavier users of alcohol than other population groups (Clements, 1999). In a cross-section of a longitudinal, prospective study of more than 2,000 young adults, researchers found heavy consumption levels of alcohol to be associated with depression (Caldwell et al., 2002). Furthermore, in a convenience sample of 300 college students, average age 22

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years, the second best predictor of alcohol abuse after family history of alcoholism was depression (r = .66 and .62 respectively) (Pullen, Modrcin-McCarthy, & Graf, 2000).

According to the WHO, depression "can be reliably diagnosed and treated, but fewer than 25% of those affected have access to effective treatments" (2006). Most college students, on the contrary, do have convenient access to health and counseling services offered on campus; however, only 20% with mental health problems seek professional help (Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006). And to compound the problem further, in terms of treating depressive symptoms, college students are documented to reach for alcohol rather than counseling services (Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006). In a study of more than 400 college students, Deykin (1987) identified a significant correlation between severe depression and alcohol abuse. This relationship insinuates that for alcohol users, alcohol consumption often becomes a preferred way of coping with stress and unstable moods that trigger depression.

A recent study showed that stress, together with sleep loss and substance abuse, is recipe for clinical depression (Voelker, 2004). The same study also found the "best way to activate the stress system is with social situations" (p. 2177). Particularly on non-commuter college campuses, student and residence life revolves around a continuous state of social affairs. This communal and societal heaviness can instill more negative than good. According to the literature, the never-ending social pressures create a descending spiral of despondence and despair for many college students; this spiraling, in turn, leads to social withdrawal, substance abuse, lowered self-esteem, relationship and

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academic difficulties (Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006).

Depression is a costly health problem; therefore, assessment, identification, prevention

and outreach efforts must be made in this population to improve the mental health,

academic performance, and social well-being of college students.

<center>Collegiate Athletes' Risks for Depression</center>

Within the college setting, a subset of students exist called collegiate athletes. In

the NCAA alone, there are more than 360,000 student-athletes participating in 23 sports

on more than 1,000 campuses (NCAA, 2006b). Collegiate athletes are considered a

"high-risk" subculture on American college campuses for a variety of health behaviors,

including alcohol use and abuse, eating disorders, the stressors of injuries and academic

performance, overtraining, lack of sleep, and feelings of exhaustion (Etzel, Watson,

Visek, & Maniar, 2006; Nattiv, Puffer, & Green, 1997; Selby, Weinstein, & Bird, 1990).

Many of these variables have been shown to correlate directly to depression (Wells,

Kataoka, & Asarnow, 2001).

Alcohol Use

Participation in athletics has repeatedly been associated with increased levels of

alcohol use (Gutgesell, Moreau, & Thompson, 2003; Nelson & Wechsler, 2001; Vickers

et al., 2004; Wechsler & Davenport, 1997). Every four years, the NCAA research staff

assesses alcohol use and abuse in its athletes. Approximately 80% of collegiate athletes

surveyed in both 2001 and 1997 reported using alcohol (NCAA, 2001). Although this

statistic was down from 88% in 1993, almost one-third of collegiate athletes in 2001

reported performing poorly in practice or competition at least once as a consequence of

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alcohol use (NCAA, 2001). Furthermore, according to the results of a randomized large-scaled (N=140) national college study, 61% of male collegiate athletes and 50% of female collegiate athletes were classified as binge drinkers (five drinks in a row for men; four drinks in a row for women) compared to 43% male and 36% female controls (Wechsler & Davenport, 1997). These results are consistent with another study, completed at two NCAA Division I Universities, which reported that the prevalence of binge drinking among female collegiate athletes was 50% (Gutgesell, Moreau, & Thompson, 2003). Findings from the Harvard School of Public Health also identified that collegiate athletes binge drink at higher rates than their non-athletic peers (Nelson & Wechsler, 2001). Data collected from their College Alcohol Study revealed that male athletes binge drink at a rate 16% higher and females at a rate 19% higher than non-athlete male and female students. The study also reports that more athletes than non-athletes experience alcohol-related harms and consequences such as destructive behavior and academic problems (Nelson & Wechsler, 2001). Numerous studies report that heavy drinkers earn lower GPAs than do non-drinkers (Engs & Hanson, 1985; Pullen, Modrcin-McCarthy, & Graf, 2000). Participation in athletics has been associated with alcohol use on account of increased opportunities for social drinking, greater peer acceptance of drinking behaviors, and increased stress levels (Vickers et al., 2004); however, lower life satisfaction has also been suggested as a risk factor for alcohol use. Heavy consumption levels of alcohol are positively associated with depression (Caldwell et al., 2002).

Disordered Eating

Not only is alcohol use and abuse more common among collegiate athletes than non-collegiate athletes, but eating disorders are also more widespread, especially among female athletes (Gutgesell, Moreau, & Thompson, 2003). According to the DSM-IV-TR, anorexia nervosa, bulimia nervosa and exercise addiction are psychological disorders in which 95% of its sufferers are women (APA, 2000). Female collegiate athletes experience the same societal pressures to be thin, lose weight, and be more aesthetically appealing as their non-athletic peers, but additionally, collegiate athletes are often either internally or externally pressured to maintain a certain weight for peak performance. These pressures can lead to dysfunctional eating behaviors. In the literature, the incidence of eating disorders is a topic of growing concern. Thompson & Sherman (1993) state: "Athletes appear to be at increased risk not only due to factors within the sport environment, but also because they frequently possess traits that are common among individuals with eating disorders (e.g. perfectionism, need for achievement, ability to withstand pain and discomfort)" (p. 21).

According to a NCAA study on athletes and eating disorders, approximately 10% of female athletes had clinically significant problem eating behaviors; an additional 35% were at risk for anorexia nervosa and 38% were at risk for bulimia nervosa (Johnson, Powers, & Dick, 1999). In another study, Sundgot-Borgen (1994) identified that 22.4% of collegiate athletes' respondents were at risk for an eating disorder based on a triangulation of qualitative interviews and quantitative scores from the Eating Disorders Inventory-2. Furthermore, dietary intakes of athletes were studied, and researchers

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identified problems such as low total energy intake and low carbohydrate intake (Economos, Bortz, & Nelson, 1989). A high-carbohydrate diet is one of the most important nutritional principles for both fitness enthusiasts and collegiate athletes, especially those participating in endurance sports and other sports requiring high workloads. When glycogen levels drop too low, the ability of physical exertion falls, and consequently the participant feels stale, tired, and is more prone to injury (Costill, 1988; Thompson & Sherman, 1993). Disordered eating can negatively affect every aspect of a collegiate athlete's life, often leading to a lack of concentration in academics, athletic underachievement, social withdrawal, and feelings of sadness, irritability and hopelessness. Depressive symptoms have been documented to be strongly associated with disordered eating (Mazzeo & Espelage, 2005).

Sports-Related Injuries

In reviewing sports-related injuries, the results of one inclusive study states that 30% to 40% of all collegiate athletes will suffer such an injury at some point during their college career (Meeuwisse & Fowler, 1988). The literature notes that in both exercisers and athletes, these injuries trigger a progressive grief response that processes through the following five stages: denial, anger, bargaining, depression and acceptance/ reorganization (Hardy & Crace, 1990). Perceived loss, feelings of bereavement and physical illness are risk factors for depression (NIHM, 2006). Depression is positively associated with an injury, especially if the student's self-image revolves around his or her identity as an athlete. According to Rosenberg, Schooler, & Schoenbach, (1989), "subjective physical health status is an instrument for self-esteem, especially when

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physical health is a major source of pride to an individual" (p. 1012). In collegiate

athletes, physical strength, vigor and fitness are of the essence. Coaches and team staff

members may convey, consciously or inadvertently, that winning is more important than

the athlete's well-being; therefore, when a player is hurt, he or she no longer contributes

toward winning and is useless and unworthy. Therefore, when a physical injury occurs,

the self-esteem of the athlete is affected in terms of decreased sense of pride,

despondency, and despair. In a study of 72 athletes with sports-related injuries, the Mayo

Clinic found that injured athletes displayed heightened symptoms of depression. More

profound symptoms of depression were associated with the severity of injury, level of

impaired sports performance, and lack of social support (Manuel et al., 2002; Smith,

Scott, O'Fallon, & Young, 1990). In another small-scaled, qualitative study on collegiate

athletes' coping with sports injuries, the primary resources lost as a result of injury

included physical health, independence, self-perception and identify, sense of

achievement, and social role (Ford & Gordon, 1999).

Academic Difficulties

In addition, practice and competition schedules, along with travel demands, often

result in decreased time and attention to academic work loads, compared to other college

students. Literature on the academic achievement of student-athletes is inconsistent.

However, a recent report cites that "athletes under-perform academically and they form

an athletic subculture that contributes to their failure to take full advantage of the

educational opportunities that college and universities are there to provide" (Shulman &

Bowen, 2001, p. 270). One of the most frequently cited sources of depression in college

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students is academic difficulties; depression, in turn, further distresses academic performance, school and life satisfaction, and social relationships, creating a vicious cycle of helplessness and despair (Backels & Wheeler, 2001; Hetligenstein, Guenther, Hsu, & Herman, 1996).

Lack of Sleep

Collegiate athletes are often forced to sacrifice sleep. The National Sleep Foundation recommends that the average college student sleep about nine hours per night (National Sleep Foundation, 2004). Recent studies, however, report that the average student acquires only six hours (Buboltz, Brown, & Soper, 2006). For the collegiate athlete, with increased physical and time demands, along with regular travel schedules, the number of hours per night can be even lower, causing heightened levels of sleep deprivation and insomnia. Many times athletes are forced to practice either very early in the morning or very late at night to work around their academic schedules. Countless coaches require athletes to practice twice a day, with only one day off per week, year-round. Athletes need even more hours of sleep than the average college student to recover and to repair active muscle tissues (Gavin, 2006). For example, collegiate runners need at least one extra minute per night per each mile trained per week (e.g. thirty minutes of sleep per night for 30 miles per week) (Burfoot, 2005). Most collegiate runners run an average of 60 miles plus per week; consequently, they need at least one hour additional sleep per night compared to the average college student. Because training and traveling overfill the already busy college-student days, collegiate athletes tend to sleep even less, averaging four to six hours per night (Gavin, 2006). Due to inconsistent

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sleeping patterns, busy schedules, and intensive training loads, "athletes are prone to insomnia, or the ability to fall or stay asleep... which affects their ability to perform both intellectually and physically during the day" (Gavin, 2006). Lack of sleep is positively correlated to depression, exhaustion, concentration and academic difficulties, and suicide (Buboltz, Brown, & Soper, 2006; Cukrowiez et al., 2006).

Overtraining

In addition to sleep difficulties, intense and prolonged practice and competition schedules often result in a syndrome called "overtraining." Signs and symptoms of overtraining include the following: exhaustion, sleep disturbances, lowered self-esteem, appetite fluctuations, irritability or anxiety, weight loss, lack of mental concentration and motivation, immune suppression, delayed physical recovery and decreased performance (Kreider, Fry, & O'Toole, 1998). Sanders, Field, Diego, & Kaplan (2000) studied hours of sports involvement on depression levels. High school students that were classified as "high sports involvement" (seven or more hours per week), had more symptoms of depression than low (two or less hours) to moderate (three to six hours per week) sports involvement respondents. The researchers concluded that high levels of sports participation led to overtraining and that "depression is one of the cardinal signs of overtraining in athletes" (Sanders, Field, Diego, & Kaplan, 2000, p. 797). All psychological, physiological, and physical symptoms of overtraining correlate directly to, and are sources of, depression (Kreider, Fry, & O'Toole, 1998).

Collegiate athletes must cope with the same college stressors that non-athletes face: academics, loneliness, financial problems, and relationship and environmental difficulties, but they are also expected to deal with additional challenges of sport participation including time management, travel and training loads, and excessive performance pressures and anxieties (Etzel, Watson, Visek, & Maniar, 2006; Furr, Westefeld, McConnell, & Jenkins, 2001). Therefore, collegiate athletes are thought to "face even more psychological and physical health problems than the average college student" (NCAA, 2006a). Depression can be reliably diagnosed and treated (WHO, 2006), and most college students do have convenient access to health and counseling services offered on campus (Michael, Huelsman, Gerard, Gilligan, & Gustafson, 2006). However, according to the literature and Centenary College's Director of Counseling Services, collegiate athletes tend to underutilize campus health services even more so than their non-athletic peers. The stigma of "being depressed" or "seeing a counselor" is often considered a "weakness" by the athletic subculture. Athletes also fear a loss of confidentiality in seeking help (T. Felt, Director of Counseling, personal communication, December 13, 2006; Maniar, Chamberlain, & Moore, 2005). The NCAA has just begun to recognize that the increased stress placed on student-athletes is significantly associated with depression and is currently developing psychological guidelines for collegiate athletic departments to use to address depressive symptoms in this population (NCAA, 2005). Depression is a disparaging health problem; therefore, assessment, identification, prevention and outreach efforts must be made in this population to improve the mental

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health, academic performance, and social well-being of all students, most notably those students at high-risk.

Collegiate Athletes' Protection from Depression

Although preliminary data identifies that athletes do experience both internal and external pressures and anxieties (Damm & Murray, 1996) and may be at similar or higher risk for depression than their peers (Maniar, Chamberlain, & Moore, 2005), research is limited on depression in collegiate athletes (Etzel, Watson, Visek & Maniar, 2006). Collegiate athletes may actually be protected from depression due to lifestyles that revolve around the following: 1) regular exercise (Martinsen, 1990; North, McCullagh, & Tran, 1990), 2) increased levels of self-esteem (Bowker, 2006; Dishman et al., 2006), and 3) social support and connectedness (Williams & Galliher, 2006).

Regular Exercise

First, a major conclusion in the 1996 surgeon general's report on physical activity and health, was "physical activity improves mental health." The report also cites a "beneficial effect of physical activity on relieving symptoms of depression and anxiety and on improving mood" (U.S. Department of Health and Human Services, 1996). A study of more than 1,500 adults indicated that physically active people were three times less likely to suffer from depression than sedentary individuals (Weyerer, 1992). Evidence from four population surveys in the U.S. and Canada showed that physical activity was significantly associated with enhanced mood, overall well-being, and less anxiety and depression (Stevens, 1988). Another noteworthy study of 5,000 adolescents

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concluded that emotional wellness was connected to the extent of participation in sports and vigorous recreational activity (Steptoe & Butler, 1996).

Exercise is viewed as both preventative and a treatment method to stress, anxiety, and depression. Numerous studies have shown that exercise is associated with reduced depression and have concluded that consistent exercise is the "magic bullet" to improved mood state and managed stress (Gazmararia, Baker, Parker, & Blazer, 2000; Steptoe & Butler, 1996). In a randomized clinical trial of more than 150 severely depressed patients, researchers at Duke University concluded that 16 weeks of aerobic exercise was as beneficial as taking the antidepressant medication, Zoloft, in reducing depression scores (Blumenthal et al., 1999).

The literature also cites the significance that consistent strength training programs have on improving self-esteem, body image and emotional well-being, and reducing anxiety (Melnick & Mookerjee, 1991; Tucker & Maxwell, 1992). In a randomized, experimentally-designed study, Harne & Bixby (2005) used the Benefits and Barriers to Exercise (BBE) questionnaire to examine the differences in strength training commitment behaviors in female college-students. Although both the strength trainers and non-strength trainers recognized and appreciated the benefits of strength training regimes, "time-effort" was a significant barrier to the non-strength trainers' adherence (Harne & Bixby, 2005). Since most collegiate athletic teams require their athletes to strength train as part of their physical conditioning, "time-effort" is a barrier that is overcome through the requirement of sport participation.

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Although there is an inverse relationship between depressive symptoms and levels of physical activity (Morgan, 2000; Stephens, 1988), intense and prolonged training periods, such as the consistent training regimes of collegiate athletics, are thought to harbor the opposite effect. Most studies that reveal a relationship between exercise and depression follow the American College of Sports Medicine's (ACSM) guidelines: three to five days per week, 20 to 60 minutes of moderate-intensity aerobic activities such as brisk walking, jogging, cycling, or swimming. It is assumed that if exercise is to be effective in reducing risks and symptoms of depression, it must be non-competitive, moderate in intensity, and completed in either a relaxing or appeasing environment (U.S. Department of Health and Human Services, 1996).

Self-Esteem

Second, low self-esteem is an indicator of depression symtomatology during adolescence (Goodman & Whitaker, 2002). Studies have shown that participation in sports increases self-esteem (Bowker, 2006; Dishman et al., 2006; Kumar, Pathak, & Thakur, 1985). Researchers surveyed approximately 400 students in fifth to eight grade to gain insight into their sport participation as well as their perceptions of self-esteem (Bowker, 2006). The results indicated that for both genders, sport participation beyond physical education class, made children feel better about their physical appearance and abilities. The researcher concluded that "sports participation had its strongest impact on physical self-esteem, which, in turn, was predictive of general self-esteem or global self-worth" (Bowker, 2006, p. 226).

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Compared with non-athletes, female athletes in general have been found to be more achievement-oriented, independent, emotionally stable, and assertive (Williams, 1980). Results from another study of more than 1,200 female, high school seniors concluded the following: Sport participation has a positive impact on physical self-esteem; there is an inverse correlation between self-esteem and depression symptoms; and the relationships were all unrelated to levels of fitness, skill ability, body mass index, body fat, or appearance. The researchers cited that "physical self-concept mediates the relations of physical activity and sport participation with self-esteem, which is inversely related to depression symptoms among girls in late adolescence" (Dishman et al., 2006, p. 401).

Social Support and Connectedness

Finally, based on the Self Psychology Theory, social connectedness is thought to be shaped in the early years of life (Lee, Draper, & Lee, 2001) when most athletic participation begins. Teen and college years are "critical developmental periods" (p. 317) when peer and group associations allow individuals to "identify with others who share similarities in appearance, interests and talents which draw people closer together and validate a sense of connectedness" (p. 311). Lee, Draper, & Lee (2001), disclose that people with low levels of social connectedness report more psychological distress including "loneliness, anxiety, jealousy, anger, depression and low self-esteem" (p. 311), whereas people with high levels of social connectedness are protected from depressive symptomatology (Baumeister & Leary, 1995). Sport participation is often performed with others and leads to improved opportunities for social interactions, working

relationships, and personal attention. In one recent study by Williams & Galliher (2006), social connectedness was identified as a highly significant variable when assessing depression and self-esteem in college students. However, further research is warranted on how social connectedness may regulate one's inclination to depression symptomatology and other high risk behaviors (Verlinden, Hersen, & Thomas, 2000).

Predictors of Depression

A growing body of evidence has used various models and theories to guide the empirical knowledge of the constructs and principles that underlie symptoms and causes of depression. These theories include: Rosenberg's Self-Esteem Theory (1965, 1986), the Exercise and Self-Esteem Model (Sonstroem & Morgan, 1989), Bandura's Social Learning Theory (1977, 1997), Kohut's Self Psychology Theory (1971, 1977, 1984), and the Social Networks and Social Support Theory (Israel, 1982).

Risk Factors for Depression

Depression is a disabling illness associated with physical, emotional, and social impairment. Unfortunately, it is not fully known what specifically causes depression (NIMH, 2006). There are numerous theories about causes such as biological and genetic factors, environmental influences, and childhood or developmental events. However, it is generally believed that depression is most often caused by the influence of one or more risk factors (NIMH, 2006). The NIMH reports that depression can be anywhere from 40% to 70% genetic, but it also lists the following as other contributing causes: the physiologic composition of brain chemicals, psychological factors such as low self-esteem, pessimism, and tendencies to worry, early tramatic childhood experiences,

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stressful life events in adolescence and adulthood, and alcohol and drug use (NIHM, 2006). A meta-analysis of the literature completed by MacPhee & Andrews (2006) identifies the most commonly cited and studied risk factors for depression in early adolescence: "Parental depression, negative life events/life stress, problematic peer relationships, negative parental rearing behavior, low self-esteem, negative body-image, low socioeconomic status (SES), conduct problems, and attention regulation difficulties, are among the variables most consistently associated with depression across studies" (MacPhee & Andrews, 2006, 435-6).

Gender

Gender is also a risk factor for depression. Women are twice as likely to be diagnosed and treated for major depression then men (Le, Munoz, Ippen, & Stoddard, 2003; NIMH, 2006). According to MacPhee & Andrews (2006), women are also noted to have more troubles with peer relationships than men, and difficult relationships are one risk factor for developing depression. It has been noted that, especially in young females, low self-esteem, lack of social support, and negative thinking and experiences are recognized as predictors for depression later in life (Wainwright & Surtees, 2002).

Self-Esteem

According to the NIMH, and substantiated by MacPhee & Andrews' (2006) research, "low self-esteem seems to be a critical risk factor for depression, a finding that does not differ by gender" (p. 460). Self-esteem, also often referred to as self-concept, is defined as the degree to which an individual feels positive about him/herself. Self-esteem is a sense of personal worthiness; being confident and competent and of one's abilities to

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achieve or cope with life challenges (Rosenberg, 1965). The literature identifies self-esteem as a major risk factor for depression on account of its relevance to psychological well-being (Garber, Robinson, & Valentiner, 1997; Muris, Schmidt, Lambrichs, & Meesters, 2001). Young adults with low self-esteem present feelings of low self-worth, helplessness, and more anxiety and depression (Coopersmith, 1981). In a recent comprehensive study of over 2,000 students, ages 12 to 13 years, MacPhee & Andrews (2006) studied nine of the most common risk factors for depression and "self-esteem emerged as the best predictor of depression by a considerable margin" (p. 453). Although most research, including the DSM-IV-TR (APA, 2000), indicates that low self-esteem is a key symptom rather than a cause of depression, the variable self-esteem emerged as the dominate predictor of depression in both genders by a significant margin: 31% compared to the other eight variables each accounting for no more than 5% of the remaining variance (MacPhee & Andrews, 2006). One of the most grounded reputable conclusions in the literature is the inverse relationship between self-esteem and depression in people of all ages (Rosenberg, Schooler, & Schoenbach, 1989).

It is greatly debated as to whether self-esteem is an unwavering personality trait or if it is a psychological state that varies depending on external events/influences. A study performed by Luxton & Wenzlaff (2005) found that people with a history of depression reported comparable levels of self-esteem as never-depressed individuals; however, those with a history of depression were more "uncertain" of their self-esteem. "Their uncertainty led to higher levels of thought suppression and excessive reassurance seeking" (Luxton & Wenzlaff, 2005). Another study done by Sax (1997) found that only

48% of college women, along with 59% of college men, were "confident" in their emotional health: a cause for concern considering self-esteem is significantly related to psychological well-being. According to the theoretical foundations of Morris Rosenberg's research, self-esteem is an influential variable constructed through one's personal experiences as a result of social forces. The fundamental principles that underlie the concept of self-esteem include reflected appraisals (perceived judgments from others), social comparisons (comparing traits to others), self-attributions (perceived success or failure of efforts), and psychological centrality (self-ascribed importance of a role identity) (Rosenberg, 1965, 1986).

In a longitudinal study of more than 600 college freshmen, researchers assessed Rosenberg's fundamental principles that underlie the Self-Esteem Theory. Sargent, Crocker, & Luhtanen (2006) examined the hypothesis that people with a history of depression have "self-esteem that is dependent on external sources such as approval from other people (e.g. reflected appraisals) or success in competence-related domains (e.g. self-attributions)" (p. 629). According to the literature, when a person's self-concept revolves around external adoration, approval, encouragement and support, or high standard achievement, any downbeat occurrence with one of these environmental sources will lessen self-esteem and, in turn, increase symptoms of depression (Sargent, Crocker, & Luhtanen, 2006). Sargent, Crocker, & Luhtanen (2006) found the following:

> External contingencies of self-worth, which are highly dependent upon
> other people or events, such as other's approval, academic or athletic
> performance for their satisfaction, or that represent relatively superficial

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aspects of the self (e.g. appearance), are associated with lower levels of psychological well-being, including increased neuroticism, decreased self-esteem, increased vulnerability to binge drinking, and higher levels of daily stress. In contrast, internal contingencies of self-worth, in which self-esteem is based on intrinsic or unconditional aspects of the self such as virtue or God's love, are associated with higher levels of psychological well-being. (p. 631)

Researchers used the Contingencies of Self-Worth Scale (CSWS) to compare the following domains: other's approval, appearance, competition, academic competence, family support, virtue and God's love on levels of depression (Crocker, Luhtanen et al., 2003). The CSWS was statistically analyzed in congruence with the CES-D and the Marlowe-Crowne Social Desirability Scale. The results concluded that "external contingencies of self-worth significantly predicted the level of self-reported depression symptoms as well as increases in depressive symptoms over the first semester of college; internal contingencies of self-worth (e.g. God's love and virtue) did not significantly predict depressive symptoms or changes in depressive symptoms over time" (Crocker, Luhtanen et al., 2003, p. 640).

Additionally, a secondary data analysis of more than 2,000 high school boys concluded that "superior performance within a valued arena of achievement produced favorable reflected appraisals, social comparisons, and self-attributions" (Rosenberg, Schooler, & Schoenbach, 1989, p. 1012). This study allowed researchers to understand "why grades exercise a positive effect on global self-esteem" (p. 1012), but it can also be

interrelated to how athletic achievement produces constructive fundamental self-esteem principles. Therefore, it can be understood why coaches and other teammates have an effect (positive or negative) on collegiate athletes' self-esteem (Rosenberg, Schooler, & Schoenbach, 1989). In one study, low self-esteem athletes who had supportive and instructive coaches expressed positive experiences of their coach and their sport participation, compared to low self-esteem athletes who with less supportive and instructive coaches expressed negative experiences. High self-esteem athletes were not affected to the same extent, pinpointing that high self-esteem protects people from external forces of depression risk factors (Barnett, Smoll, & Smith, 1992). It has been noted that, especially in young females, low self-esteem, lack of social support, and negative thinking and experiences are recognized as predictors for depression later in life (Wainwright & Surtees, 2002).

There are also three independent, yet interrelated traits that correlate to self-esteem: locus of control (Fitch, 1970; Klein & Keller, 1990; Sheridan, 1991), a sense of belonging and acceptance (Washiawotok, 1993), and a sense of competence or self-efficacy (Bandura, 1977, 1997). In Albert Bandura's Social Learning Theory, self-efficacy or "a person's perceived capability to perform a behavior" (Bandura, 1997), plays a significant role in performing health-related behaviors, including exercise and medical regimes. The concept of self-efficacy relates to Rosenberg's (1965) self-attribution principle. Bandura (1982) identifies several reasons why perceived self-efficacy tends to enhance performance outcomes:

People who judge themselves ineffective in coping with environmental demands tend to generate high emotional arousal, become excessively preoccupied with personal deficiencies and cognize potential difficulties as more formidable than they really are… therefore, self-judged efficacy determines how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences… those who have a strong sense of self-efficacy exert greater effort to master challenges. (p. 25-26)

Additionally, Luxton, Ingram, & Wenzlaff (2006) studied 400 college students to gain a better understanding of the impact of certain forces including locus of control, self-efficacy and sense of competence on self-esteem. The outcome of the comparison study indicated that the "seemingly adaptive self-appraisals" of college students with a history of depression "remain relatively pessimistic bias toward the likelihood of future events" (Luxton, Ingram, & Wenzlaff, 2006, p. 850). High levels of self-esteem certainty were associated with increased confidence and optimism about future events, whereas individuals with a history of depression maintained pessimistic preconceptions toward future events (Luxton, Ingram, & Wenzlaff, 2006). This conclusion supports the literature that cites "depressed individuals show pessimistic attitudes and hopeless expectations about the future" (Andersen, Spielman, & Bargh, 1992). Negative thinking, a frequent symptom of depression, takes hold of an individual's emotional health and elevates levels of depression (Wainwright & Surtees, 2002).

Penden, Rayens, Hall, & Beebe (2001) conducted a randomized, controlled prevention trial to investigate the outcome of a six-week group intervention proposed to increase self-esteem and to reduce negative thinking and depressive symptoms among 246 at-risk college women with similar baseline scores. After completing the intervention which included cognitive-behavioral, relaxation and affirmation techniques, as well as educational sessions on 'understanding the impact thinking has on moods', the experimental group had significantly higher self-esteem, lower negative thinking, and less depressive symptoms than the control group, lasting 18 months post-intervention (Penden, Rayens, Hall, & Beebe, 2001). This study supports the theoretical principles that indicate that self-esteem is an influential variable constructed through one's personal experiences as a result of social forces, locus of control (Fitch, 1970; Klein & Keller, 1990; Sheridan, 1991), and a sense of competence/self-efficacy (Bandura, 1977, 1997). According to Sargent, Crocker, and Luhtanen (2006):

> Clinical psychologists have long suggested that the risk factor [for depression] is not simply a low level of self-esteem, but fragility of self-esteem resulting from reliance on external validation to sustain a sense of self-worth... basing one's self-worth on external sources such as others' approval, appearance, and academic [and athletic] competence is a risk factor for increased symptoms of depression in college freshmen. (p. 644)

Self-esteem certainty may, therefore, play an important part in determining vulnerability to depression.

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Grade Point Average

Numerous studies have associated depression with low levels of academic achievement (Haines, Norris, & Kashy, 1996; Kaltiala-Heino, Rimpelae, & Rantanen, 1998). When a college student's self-concept revolves around external contingencies of self-worth such as high standard achievement, a devalued confidence in academic ability will reduce self-esteem and, in turn, increase symptoms of depression (Sargent, Crocker, & Luhtanen, 2006). A recent longitudinal study of approximately 500 middle school students found that "more depressive symptomatology was associated with decreases in GPA over two years" (Shahar, Henrich, Winokur, Blatt, Kuperminc, and Leadbeater, 2006, p. 151). Decreased GPA affects a college student's locus of control, self-esteem, and sense of competence. This interaction leads to negative thinking, a symptom of depression, and has a profound impact on the "adaptive self-appraisals" of college students who will "remain relatively pessimistic bias toward the likelihood of future events" (Luxton, Ingram, & Wenzlaff, 2006, p. 850). Negative thinking about academic achievement takes hold of a college student's emotional health and elevates levels of depression (Wainwright & Surtees, 2002). On the other hand, according to Bandura (1982), college students with "a strong sense of self-efficacy exert greater effort to master challenges" (p. 26), resulting in higher GPAs. This is consistent with Rosenberg, Schooler, & Schoenbach's (1989) research on how grades affect self-esteem. According to the researchers, students who perceive valued success and achievement on academic challenges will consequently construct higher levels of self-esteem. GPA and academic

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competence are, therefore, not only predictors, but also symptoms of self-esteem and depressive symptomatology.

Levels of Exercise

Levels of exercise and physical activity have been shown to relate to perceived levels of self-concept, self-esteem and self-efficacy; all variables that refer to how an individual feels about himself, his capabilities, and his vulnerability to depression (Fox, 1997). Cross-sectional studies show that physically active people are three times less likely to suffer from depression than sedentary individuals (Morgan, 2000; Stephens, 1988; Weyerer, 1992). Exercise is viewed as both preventative and as treatment methods to stress, anxiety and depression. Numerous studies have shown that consistent exercise is associated with reduced depression and have concluded that it is the "magic bullet" to improved mood state and managed stress (Gazmararia, Baker, Parker, & Blazer, 2000; Steptoe & Butler, 1996). Low levels of exercise are associated with low levels of serotonin, a neurotransmitter involved in the physiologic composition of brain chemicals that has been identified as being connected to depression (Nash, 1996). According to Sonstroem (1997), it is more commonly believed that the biological and psychological changes in the body as a result of fitness training are associated with significant increases in self-esteem based on perceptions of improvement rather than physiological improvements in fitness itself.

Because there is an inverse relationship between depressive symptoms and levels of physical activity (Morgan, 2000; Stephens, 1988), self-esteem is the mental health variable with the greatest potential to be enhanced with an exercise intervention. Meta-

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analysis reviews of the literature completed in 1986 and 1991 highlighted the prominent link between exercise and self-esteem in children and adults, respectively (Gruber, 1986; McDonald & Hodgdon, 1991). Another meta-analysis review testified that enhanced self-esteem was correlated with physical activity (Sonstroem, 1984). In a 12 month randomized, controlled trial of 174 adults, progressive levels of physical fitness were associated with enhanced levels of self-esteem (McAuley, Blissmer, Katula, Duncan, & Mihalko, 2000). Furthermore, strength training trials in randomly assigned women, as well as in cardiac rehabilitation patients, has been associated with improved body image and enhanced self-efficacy (Beniamini, Rubenstein, Zaichkowsky, & Crim, 1997; Tucker & Mortell, 1993).

Low self-esteem is an indicator of depression symtomatology during childhood and adolescence (Goodman & Whitaker, 2002). Gruber (1986) discovered that directed physical fitness activities were found to be superior to other components of elementary school physical education programs in developing self-esteem and self-concept in young children. A strong self-concept is critical to the healthy psychological development and adjustment of children. Exercise programs can be an important variable in helping children feel good about themselves, especially when the program emphasizes success, feelings of increased physical competence, and attainment of goals (Fox, 1997; Gruber, 1986). Studies have also shown that participation in sports during adolescence increases self-esteem (Bowker, 2006; Dishman et al., 2006; Kumar, Pathak, & Thakur, 1985). According to Bowker's (2006) research, sport participation has a statistically significant effect on physical self-esteem. Participation ultimately predicts overall self-esteem.

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Results from another study of over 1,200 female high school seniors concluded that sport participation has a positive impact on physical self-esteem, that there is an inverse correlation between self-esteem and depression symptoms, and that the relationships were all unrelated to levels of fitness, skill ability, body mass index, body fat or appearance (Dishman et al., 2006). The conclusions from this study indicate that changes in self-esteem are associated with the perception of improved fitness or social connectedness rather than actual physiological changes in physical fitness or appearance (Sonstroem, 1997).

The Exercise and Self-Esteem Model (EXSEM), developed by Sonstroem and Morgan (1989), is used to explain how exercise shapes self-esteem. According to the model, self-esteem is hierarchical in nature and progresses from an individual's perception of his or her specific exercise or sport-training behaviors through consecutive levels to the highest result of general self-esteem (Sonstroem & Morgan, 1989). The EXSEM proposes that exercise participation changes self-efficacy, which is the confidence in one's ability to complete a task. The changes in self-efficacy enhance self-perception; this, in turn, influences perceived athletic competence and acceptance, lead to enhanced global self-esteem (the highest level of the model). Specific self-perceptions originate with self-efficacy beliefs regarding the individual's sense of competence with a particular physical activity. At the lower level, doubts about self-esteem may contribute to uncertainties about athletic skill/attainment and will undermine opportunities for future achievements. At the next level, intermediate self-perceptions involve athletic competence which is the individual's sense of overall fitness and physical acceptance or

the degree of satisfaction with the body. The specific self-perceptions are then incorporated into the global perception of the self (Sonstroem & Morgan, 1989). In essence, self-esteem is multidimensional and exercise/sport participation is associated with greater feelings of self-esteem, mainly because people get a sense of satisfaction from accomplishing something they could not do before. They may also receive more recognition, approval and attention from a variety of external sources. In this sense, it would be assumed that collegiate athletes would be placed at the highest level of the model with superior levels of global self-worth. However, in most of the literature it is noted that exercise programs, which sustain for at least one year if not longer, are associated with significant increases in self-esteem, but that the escalation is especially profound among "normal" individuals or in those who display substantially lower levels of self-esteem at the onset (Sonstroem, 1997). Additional research is needed on the EXSEM and collegiate athletes.

Social Connectedness

Often, people embark on an exercise program or join an athletic team for the chance to socialize and to be connected with others. The Social Learning Theory proposes that personal factors such as thoughts and emotions, behavioral and environmental factors operate as reciprocally interacting determinants of each other (Bandura, 1986). Bandura states that "people create social systems that enable them to employ greater control over their lives" (1997, p. 163). Team participation is a social system that gives people a sense of personal commitment and support from others. Belonging to such a group helps people fight loneliness and shed social isolation.

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According to Sedlacek & Adams-Gaston (1992), "athletes seem to have a unique culture and set of experiences in life that differentiate them from others. They tend to spend a great deal of time together and often have common goals and values generated by their experiences as athletes" (p. 724). This assumption was further supported by a recent study that concluded that interpersonal influences such as peers, providers, and support models "should receive greater attention in research because they increase or decrease commitment to and engagement in health-promoting behaviors" (Srof & Velsor-Friedrick, 2006, p. 372). For example, recent studies have shown that the interpersonal relationships between parents and their college student may affect and even predict students' health risk behaviors (Birch, O'Toole, & Kanu, 1997; Bylund, Imes, & Baxter, 2005). Therefore, the impact of interpersonal social relationships, whether with parents, coaches, peers or teammates, has a significant influence on a college student's personal thoughts and emotions; and this, in turn, influences one's behavior. An individual's belief that he or she can successfully perform a behavior is probably the most critical component of the Social Learning Theory (Bandura, 1986). A person with a higher level of social connectedness will have a higher level of self-efficacy and will be more enabled to increase personal control over his or her health; therefore, self-efficacy is a concrete predictor of behavior, self-esteem levels, and vulnerability to depression. This notion relates to the EXSEM (Sonstroem & Morgan, 1989), which states that self-esteem is multidimensional, and exercise/sport participation is associated with greater feelings of self-esteem, mainly because people get both an internal and external sense of satisfaction from accomplishing something they could not do before.

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The impact of interpersonal relationships within one's life relates to social connectedness, described within another theory: Heinz Kohut's self psychology (Kohut, 1971, 1977). The self psychology theory "emphasizes the relationship between the self and self-objects which are cognitive representations of other people and their actions toward the self" (Lee & Robbins, 1995, p. 232). Kohut (1984) describes "self-object needs" as the acknowledgment of ideas, talents, abilities and experiencing unity with others. According to this theory, people need three underlying principles: companionship, affiliation and connectedness in order to feel a sense of belonging. When people feel 'they belong', their feelings of loneliness and isolation are reduced; and, in turn, this decreases depression (Kohut, 1984; Lee & Robbins, 1995). Kohut (1984) emphasizes that the psychological concept and development of "self" is based on an intrinsic program of action unique to each person and is environmentally responsive. One of Kohut's fundamental principles is "mirroring" or "relatedness", similar to Rosenberg's "social comparison" doctrine (Rosenberg, 1965, 1986). According to the Self-Psychology Theory, people need reliable and supportive relationships to develop a sense of feeling important, valued, unique, special, and loved (Kohut, 1984). Social connectedness is thought to be shaped in the early years of life (Lee, Draper, & Lee, 2001) when most athletic participation begins. Teen and college years are "critical developmental periods" (p. 317) when peer and group associations allow individuals to "identify with others who share similarities in appearance, interests and talents which draw people closer together and validate a sense of connectedness" (p. 311).

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On the contrary, if a person suffers humiliation, embarrassment or a traumatic experience, he or she is more likely to resist development of "self" and suppress feelings and ideas. This concept relates to Luxton, Ingram, & Wenzlaff's (2006) inference that "attitude uncertainty is related to higher levels of thought suppression and raises the possibility that uncertain self-esteem and chronic thought suppression may precede depression" (p. 841) and that "basing one's self-worth on external sources such as others' approval, appearance, and academic [and athletic] competence is a risk factor for increased symptoms of depression in college freshmen" (Sargent, Crocker, and Luhtanen, 2006, p. 644). One possibility is that "doubts about self-worth may contribute to doubts about personal future accomplishments and serve to undermine opportunities for future success" (Luxton, Ingram, & Wenzlaff, 2006, p. 841). People with low levels of social connectedness report more psychological distress including "loneliness, anxiety, jealousy, anger, depression and low self-esteem" (p. 311), whereas people with high levels of social connectedness are thought to be protected from depressive symptomatology (Baumeister & Leary, 1995). In one recent study, social connectedness was identified as a highly significant variable when assessing depression and self-esteem in college students (Williams & Galliher, 2006).

The importance of the Social Networks and Social Support Theory for mental health and adolescent health behavior is a significant theme in the literature based on the following components of social relationships: 1) Integration or the existence of social bonds that are often homogeneous in nature; 2) Social network or the system of social relationships that encircle individuals with resources, support and emotional

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connectedness; 3) Social support which is aid and assistance with the intent of being beneficially exchanged through interpersonal relationships (Heaney & Israel, 2002). Sport participation is often performed with others and leads to improved opportunities for social interactions, working relationships, and personal attention. The social network and social support theory revolves around several key components: emotional, instrumental, informational, and appraisal support (Heaney & Israel, 2002). Social networks and support are the foundation of most athletic teams. If teammates and coaches provide an athlete with much needed emotional (empathy, trust, respect, caring), instrumental (tangible aid and services), informational (advice, suggestions, problem-solving information), and appraisal (affirmation) support, then the positive influence of those variables is documented to enhance a person's well-being and health, often regardless of other circumstances including stress levels (Cassel, 1976; Heaney & Israel, 2002). Therefore, the positive influence of a social network and of team support may be the variable that most profoundly protects collegiate athletes from depressive symptomatology even though they face the same college stressors that non-athletes face including academics, financial problems, relationship and environmental difficulties along with the additional loads of training and competition (Etzel, Watson, Visek, & Maniar, 2006; Furr, Westefeld, McConnell, & Jenkins, 2001).

In addition, the constructive impact of social networks and support leads to higher levels of social connectedness; therefore, the social health outcomes of sport participation positively influence physical and mental health outcomes which can buffer the disabling impairments of depression (Lee, Draper, & Lee, 2001). This theory "depicts social

networks and social support as the starting point or initiator of a casual flow toward physical, mental, and social health outcomes… people with social support have health advantages over those who are loosely connected" (Heaney & Israel, 2002, p. 189; p. 267).

On the contrary, if negative interpersonal interactions occur such as "mistrust, hassles, criticism, too many demands and domination", between athletes and their coach, or athletes and their teammates, then athletes will observe low levels of social support and the outcome will be more "strongly related to such factors as negative mood, unhappiness, risky healthy behaviors and susceptibility to infectious disease" (Heaney & Israel, 2002, p. 188). This view supports the notion that collegiate athletes may be at similar or higher risk for depression than their peers (Maniar, Chamberlain, & Moore, 2005). In conclusion, according to social epidemiologist, John Cassel (1976), "social support serves as a key psychosocial 'protective' factor that reduces individuals' vulnerability to the deleterious effects of stress on health… therefore, social support may influence the incidence and prevalence of a wide array of health outcomes" (Heaney & Israel, 2002, p. 188), including depression.

Conclusion

The prevalence of depression among college students is increasing at an alarming rate in the U.S. Recent studies have highlighted that depression among college students is a legitimate concern; however, very few students with mental health problems seek professional help. To date, epidemiological research generally deems depression to be caused by the influence of one or more risk factors. Because collegiate athletes are

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believed to be affected by more depression-related stimuli, their probability of having higher rates of depression than non-collegiate athletes is a valid assumption. When left untreated, depression can cultivate an array of damaging health problems that result in physical, emotional, social and/or intellectual impairment. Prevalence data and predictors of depression among college students will present health educators with valuable information to customize wellness programs and help students overcome barriers in seeking mental health services on campus.

Therefore, the purpose of this research was to examine differences between athlete status and gender on perceived levels of social connectedness, self-esteem, and depression among college students by employing a triangulation of interpersonal health behavior theories. As can be seen by the numerous theorems and factors that trigger depression symptomatology, reducing the prevalence of depression among college students is a complex problem. Thus, given the inconsistent research within the pragmatic knowledge base regarding depression among collegiate athletes, this goal of this dissertation was to fill in gaps in the literature by granting scientific data considered necessary on this health issue.

CHAPTER III

METHODS

The current study was a descriptive, comparative, cross-sectional study using survey design. The study was inherently post-positivist and used multidisciplinary methods, measures, and theories to approach objectivity (Trochim, 2006). The researcher employed three established health education self-report instruments to determine if there were significant differences between collegiate athletes versus non-collegiate athletes, female college students versus male college students, and the interaction between athlete status and gender on social connectedness, self-esteem, and depression scores. In doing so, this study adds to the undeveloped area of research within the empirical knowledge base of depression among collegiate athletes. The results from this study will also better assist health educators by identifying depression-related risk and protective factors, and prevalence data in order to form collaborative and prioritized campus health initiatives. The subsequent sections in this chapter will outline the study protocol for sampling procedures, ethical considerations for the protection of human participants, as well as data collection and analysis.

Participants

Participants in this study consisted of a volunteer sample of students at one small, private, liberal arts college in the South. Centenary College in Shreveport, Louisiana, is a four-year college, with an undergraduate enrollment of 903 mostly young (18 to 24 years

old), single, Caucasian (83%) students with the majority being female (62%). Other ethnic groups include: African American (7%), Hispanic (4%), international students (1.5%), and "other" (3.5%). Centenary College is also the smallest NCAA Division I athletics institution in the nation. Collegiate athletes account for 24% of the enrollment (N=216). Sixty-five percent of the students live on campus the majority of their college years. In terms of academic standings, 70% of the students at Centenary College were ranked in the top 20% of their high school class. The 2006-2007 year's entering freshmen averaged 26 on the ACT examination compared to the national average of 20.9 and the Louisiana state average of 19.8. Centenary College's student/professor ratio is twelve/one (Centenary College Catalogue, 2006-2007; T. Crowley, Director of Admissions, personal communication, September 19, 2006).

Procedure

This study received approval from both the TWU and Centenary College Institutional Review Boards (IRB). The timeline for the study's data collection was Tuesday, March 20, 2007 through Friday, March 23, 2007. Centenary College has one main cafeteria where the majority of the students eat breakfast, lunch, and dinner. Recruitment for the study was conducted during the regularly scheduled lunch (11:00 AM to 1:30 PM) and dinner (5:00 PM to 7:00 PM) operating hours in the College's cafeteria on four sampling dates. Signage was posted outside the entrance of the cafeteria that stated, "Volunteers, 18-24 years of age, needed for a health education research study. See inside for details". The researcher's information table was set up directly in front of the entrance to the Centenary Room, a private room inside the cafeteria, which was

conveniently located next to the trash receptacles. Another poster was attached to the information table that read, "Students 18-24 years of age - Volunteer in a health education research study for a chance to win raffle drawing prizes". The raffle prizes included a variety of $10 to $50 gift certificates from several of the local restaurants and the signage served to recruit participants for the study. Students that approached the information table were invited to participate by the researcher. The researcher personally debriefed each student by explaining the purpose of the study, the procedures, and reviewed the informed consent form which thoroughly outlined the duration of their participation as well as their possible risks, benefits, and that their participation was voluntary and anonymous (Appendix A). A convenience sample of 232 students chose to participate. Scores from five participants were removed from the analyses because they did not fully answer the survey items; therefore, the final sample for data analyses included 227 participants.

Protection of Human Participants

Institutional Review Board (IRB) approval was obtained from Centenary College's Human Subject's Committee on February 15, 2007. The IRB at Texas Woman's University (TWU) determined the study to be exempt from further review accordingly on February 19, 2007. The researcher successfully completed the National Cancer Institute's Human Participants Protection Education for Research Teams online module on December 9, 2004, in compliance with TWU's requirements. In order to guarantee the protection of all participants and comply with IRB guidelines, the consent form commenced with the following statement: *"This Informed Consent will explain*

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about being a research participant in a study. It is important that you read this material carefully and then decide if you wish to be a volunteer." Explanation of the study's purpose, duration, procedures, possible risks and benefits, confidentiality, and right to discontinue participation were provided to all participants. The consent form concluded with the following statement: *"By signing below, you confirm that you have read or had this document read to you and you freely and voluntarily choose to be in this research project"* (Appendix A).

Sampling Procedures

After IRB approval was obtained from Centenary College and TWU, the Centenary Room was reserved by the researcher through the Manager of Dining Services and Facility Services for data collection. Permission was also obtained on January 22, 2007, from Centenary's Dean/Provost of the College and Manager of Dining Services.

In this study, a volunteer sample of convenience was utilized. As described earlier, data were collected on four dates in the College's cafeteria. On the first and third sampling dates (Tuesday, March 20, 2007 and Thursday, March 22), surveys were administered during the regularly scheduled lunch (11:00 AM to 1:30 PM) and dinner (5:00 PM to 7:00 PM) operating hours. On the second and forth dates (Wednesday, March 21, 2007 and Friday, March 23, 2007), data was collected for the duration of the lunch period only. During each event, an information table was set-up inside the cafeteria in front of the Centenary Room. A raffle drawing was used to attract participants for the study. Prizes included a range of $10 to $50 gift certificates from

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several of the local restaurants and stores including Pie Works, Counter Culture, El Chico's, Brookshires, and Starbucks. Signage was placed at the entrance of the cafeteria and in front of the information table recruiting students to be volunteers in the health education research study. The information table had chairs arranged for students to sit and be debriefed by the researcher and read and sign the consent form (Appendix A). Once the student agreed to volunteer, he or she signed the informed consent form and returned it to the researcher. The researcher filed the form in a secure briefcase and handed the participant a manila envelope that contained the packet of surveys. The participant then entered the private Centenary Room where he/she completed the surveys. The Centenary Room was set up with 12 different tables and chairs accordingly. The packet of surveys included a demographic profile (Appendix B), the Center for Epidemiologic Studies Depression Scale (CES-D) (Appendix C), the Rosenberg Self-Esteem Scale (RSES) (Appendix D), and the Social Connectedness Scale-Revised (SCS-R) (Appendix E). The surveys were randomized in three different coded orders (identified as either A, B, or C) in order to test for, and counterbalance, instrument order effects. Each participant was given a unique identification (ID) code (e.g. 1-300) that was tracked in a data log to ensure non-duplicate participation. The ID code was the number located at the top right corner of the questionnaires and corresponded to the number located at the top right corner of their consent form. Following survey completion, the packet was enclosed in the manila envelop and returned to the researcher. The researcher placed the manila envelopes in a protected box. After data collection,

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each packet was reclaimed from its envelope and organized in numerical order by the ID code.

<div align="center">Instrumentation</div>

Demographic Profile

The first page of all packets was the demographic profile. Participants were asked to self-report their age, gender, height, weight, current GPA, student and relationship status, race, and residence. Respondents were asked whether or not they were a member of a Greek organization or a NCAA Division I athletics team. Respondents were also requested to report their exercise levels and sleep habits (Appendix B).

The Center for Epidemiologic Studies Depression Scale (CES-D)

Depression symptomatology was measured by using the CES-D (Radloff, 1977). The CES-D is a 20 item, self-report instrument commonly used to assess depressive symptomatology in the general population. The instrument uses a four-point, Likert scale (rarely – most or all of the time). Scores can range from $0 - 60$; a score of 16 or greater is considered positive for depression. Reliability of the scale was reported at .87, internal consistency of .91 for college populations, adequate test-retest reliability (.80 – .90) and concurrent validity (Radloff, 1991; Wells, Klerman, & Deykin, 1987) (Appendix C).

The Rosenberg Self-Esteem Scale (RSES)

Self-esteem was assessed by using the RSES, which is considered a reliable and valid self-report scale commonly used to assess feelings of self-worth (Rosenberg, 1965). The 10 item (5 positively and 5 negatively stated) instrument uses a four-point, Likert scale; the negatively stated items were recoded for consistency in scoring. For this study,

the scale was reversed (strongly disagree – strongly agree) to maintain consistency among the instruments; therefore, statistical analyses used the revised code. The range of possible scores is 10 – 40; the higher the score, the higher the self-reported self-esteem. In college populations, the test-retest reliability was in the range of .85 to .88 and Cronbach's alpha was reported at .89 (Rosenberg, 1965; Williams & Galliher, 2006) (Appendix D).

The Social Connectedness Scale-Revised (SCS-R)

The SCS-R is a 20 item (10 positively and 10 negative stated) self-report scale used to "measure social connectedness as a psychological sense of belonging" (Lee, Draper, & Lee, 2001, p. 316; Lee & Robbins, 1995). The instrument uses a six-point, Likert scale (1 = strongly disagree; 6 = strongly agree) where scores are summated and can range from 20 – 120. Higher scores indicate greater levels of social connectedness and belongingness. The SCS-R has been cited as having good internal reliability, as well as convergent and discriminant validity. Coefficient alpha in a college student sample was .92 (Williams & Galliher, 2006). Permission to use the instrument was obtained through electronic mail from Dr. Richard Lee, Department of Psychology, University of Minnesota, on January 18, 2007.

Data Analysis

Statistical Software

Statistical Package for Social Sciences (SPSS) software package Version 12.0 was used to analyze the data.

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Measures

In the current study, athlete status and gender were the independent variables. Dependent variables included depression, self-esteem, and social connectedness according to the CES-D, RSES, and SCS-R scores. Independent measures also included the following personal characteristics: age, GPA, level of weekly aerobic and strength training exercise, sleep habits, and body max index (BMI).

Descriptive Statistics

Frequencies and percentages were computed to describe the sample population for the following independent variables: 1) Personal characteristics including gender, race, international student status, and relationship status; 2) School characteristics of respondents including grade (freshman, sophomore, junior, senior), full-time student status, residential status (on-campus or off campus resident), and Greek status (member of a fraternity/sorority or non-member of a fraternity/sorority); 3) NCAA Division I varsity athletic status, and levels of weekly aerobic exercise, strength training, and sleep. Measures of central tendency (mean, standard deviation, and range) were obtained for the dependent variables (social connectedness, self-esteem, and depression), as well as for the following independent variables: GPA, age, weight (pounds), height (inches), and BMI.

Inferential Statistics

Pearson's Product Moment Correlations were computed to identify relationships between the dependent variables social connectedness, self-esteem, and depression, as well as to reveal associations between the dependent variables and age, GPA, level of

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weekly exercise, strength training, and sleep. Two-way (gender by athlete status) Multivariate Analyses of Variance (MANOVA) were conducted to test for differences between collegiate athletes versus non-collegiate athletes, female college students versus male college students, and the interaction between athlete status and gender on social connectedness, self-esteem, and depression scores. Two-way MANOVA were also computed on athlete status and gender on the following dependent measures: age, GPA, weekly levels of aerobic exercise and strength training, days of rested sleep per week, and BMI. Finally, a stepwise multiple regression was conducted to predict depression from gender, GPA, athlete status, level of weekly exercise, days of rested sleep per week, social connectedness, and self-esteem.

Instrument order effects

The CES-D, RSES, and SCS-R surveys were randomized in three different coded orders in order to test for, and counterbalance, instrument order effects. No significant effects of order were found ($p < .05$), therefore all three order groups were analyzed together in further analyses.

CHAPTER IV

RESULTS

The current study was a descriptive, post-positivist, comparative, cross-sectional study that utilized three established health education instruments to investigate the differences between collegiate athletes versus non-collegiate athletes, female college students versus male college students, and the interaction between athlete status and gender on social connectedness, self-esteem, and depression scores. Descriptive statistics were used to illustrate the characteristics of the sample population as well as the dependent measures social connectedness, self-esteem, and depression scores. Inferential statistics were used to test the hypotheses under study. Pearson's Product Moment Correlations were computed to test for significant relationships between the dependent variables, and between the dependent variables and age, GPA, level of weekly exercise, strength training, and sleep. Two-way MANOVA were conducted to test for significant differences between collegiate athletes versus non-collegiate athletes and female versus male college students. A stepwise multiple regression was conducted to determine significant predictors of depression in college students. A discussion of the data, statistical tests, and the study's limitations will proceed.

Demographic Characteristics

Two hundred and twenty-seven participants fully completed the packet of surveys. More than half of the participants were female (59.9%), while male

college students made up 40.1% of the sample; this is an accurate representation of the entire student body. Of the 227 participants, 75.8% were White, 9.7% Black, 7.9% Hispanic/Latino, 2.2% Asian/Pacific Islander, and 3.8% were classified as "other." Only ten of the participants were international students. Every respondent (100%) reported being a full-time undergraduate student and classification ranged accordingly: 29.1% freshman, 28.2% sophomore, 25.1% junior, and 16.7% senior. The majority of the participants resided on campus in a residence hall (86.8%) and 34.8% (N=79) reported being a member of a fraternity or sorority (e.g. Greek status). The majority of the respondents were single (59.9%) or in a committed dating relationship (38.8%) (see Table 1 and Table 2).

Table 1

Descriptive Personal Characteristics of Respondents (n = 227)

	Frequency	%
Sex		
Male	91	40.1
Female	136	59.9
Race		
White - not Hispanic	172	75.8
Black - not Hispanic	22	9.7
Hispanic or Latino	18	7.9
Asian or Pacific Islander	5	2.2
Other	6	2.6
White/Asian	1	0.4
Black/Hispanic	1	0.4
White/Black/Indian	1	0.4
International		
Yes	10	4.4
No	2 17	95.6
Relationship status		
Single	136	59.9
Married	1	0.4
Engaged or in a committed dating relationship	88	38.8

Note: Frequencies not adding to 227 and percentages not adding to 100, reflect missing data.

Table 2

Descriptive School Characteristics of Respondents (n = 227)

	Frequency	%
Grade		
Freshman	66	29.1
Sophomore	64	28.2
Junior	57	25.1
Senior	38	16.7
Other	2	0.9
Full Time Status		
Yes	227	100.0
Residence		
Campus residence hall	197	86.8
Fraternity or sorority house	2	0.9
Off-campus housing	22	9.7
Parent or guardian's home	6	2.6
Greek status		
Yes	79	34.8
No	148	65.2

Note: Frequencies not adding to 227 and percentages not adding to 100, reflect missing data.

Of the 227 participants, 45.8% (N=104) reported being a member of a NCAA Division I varsity athletics team, while 54.2% (N=123) classified themselves as a non-collegiate athlete. When asked on how many of the past seven days they engaged in vigorous exercise for at least 20 minutes or moderate exercise for at least 30 minutes, 23.3% reported 0 – 1 day and 76.6% reported 2 – 7 days (see Table 3 for complete results). When asked on how many of the past seven days they engaged in exercises to strengthen or tone their muscles such as push-ups, sit-ups, or weight lifting, 36.1% reported 0 – 1 day and 63.9% reported 2 – 7 days. When asked on how many of the past seven days did they get enough sleep so that they felt rested when they woke up in the morning, 19.4% reported 0 – 1 days, 50.2% 2 – 3 days, 25.1% 4 – 5 days, and 5.3% 6 – 7 days (see Table 3).

As shown in Table 4, the average age of participants was 20 years ($M = 19.87$, $SD = 1.33$) and their ages ranged from 18 to 24 years old. Participants reported having a "B" GPA ($M = 3.09$, $SD = 0.62$). In addition, body mass index (BMI) was calculated by using the following formula: [(weight in pounds * 703) / (height in inches^2)]. Table 4 shows the reported mean weight and height to disclose a BMI average of 24.31 ($SD = 4.48$), revealing a sample of high-normal (BMI = 18.5 – 24.9) to overweight (BMI = 25 – 29.9) participants.

Table 3

Descriptive Characteristics of Respondents by Athlete Status, Exercise Frequency, and

Hours of Sleep (n = 227)

	Frequency	%
NCAA Athletics		
Non-Athlete	123	54.2
Collegiate Athlete	104	45.8
Aerobic		
0 – 1 day(s)	53	23.3
2 – 3 days	62	27.3
4 – 5 days	69	30.4
6 – 7 days	43	18.9
Strength		
0 – 1 day(s)	82	36.1
2 – 3 days	87	38.3
4 – 5 days	41	18.1
6 – 7 days	17	7.5
Sleep		
0 – 1 day(s)	44	19.4
2 – 3 days	114	50.2
4 – 5 days	57	25.1
6 – 7 days	12	5.3

Note: Frequencies not adding to 227 and percentages not adding to 100, reflect missing
data.

Table 4

Descriptive Characteristics of Respondents by GPA, Age, Weight, Height, and BMI

(n = 227)

	n	Mean	SD	Minimum	Maximum
GPA	227	3.09	0.62	1	4
Age	227	19.87	1.33	18	24
Weight (lbs)	225	158.52	36.24	105	325
Height (in.)	227	67.58	4.40	59	79
BMI	225	24.31	4.48	17.93	44.07

Participants completed three different surveys by rating the degree to which they agreed or disagreed with each statement using a numerical scale (e.g. 1 – 6). The SCS-R ranges from 20 (low) – 120 (high) social connectedness. As shown in Table 5, descriptive statistics of the social connectedness dependent measure revealed a range of 43 – 120 with a mean of 93.07 (*SD* = 15.04), identifying a moderate to strong sense of social connectedness in this cohort population. The RSES ranges from 0 (low) – 30 (high) self-esteem. Descriptive statistics of the self-esteem dependent measure revealed a range of 11 – 19 with a mean of 15.56 (*SD* = 1.5), revealing standard levels of self-

esteem. The CES-D ranges from 0 – 60; high scores indicate high levels of distress. A score greater than 16 suggests a clinically significant level of depression. In the present study, the mean score on the CES-D was 15.37 ($SD = 9.58$), highlighting high levels of depression in this population.

Table 5

Descriptive Statistics of Dependent Measures (n = 227)

	n	Mean	SD	Minimum	Maximum
Social Connectedness	227	93.07	15.04	43	120
Self Esteem	227	15.56	1.50	11	19
Depression	227	15.37	9.58	0	49

Hypothesis Testing

Three null hypotheses were tested. The results for null hypotheses 1 and 2 are illustrated in Tables 6 and 7. Preliminary analyses for null hypothesis 3 are displayed in Tables 8, 9, and 10. The results for null hypothesis 3 are presented in Table 11. The outcome of this study includes the following:

Null Hypothesis 1: There will be no statistically significant relationships between social connectedness, self-esteem, and depression scores among college students ages 18 to 24 attending Centenary College.

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Pearson's Product Moment Correlations demonstrated that null hypothesis 1 was not supported because there were significant moderate correlations between all three dependent measures. As illustrated in Table 6, the relationship between depression and self-esteem, $r(227) = -.372, p < .01$, shows that self-esteem has an inverse relationship to depression. This finding indicates that as levels of self-esteem increase, levels of depression decrease. The inverse relationship between depression and social connectedness has a higher correlation, $r(227) = -.619, p < .01$; increased social connectedness is related to decreased depression, and vice versa. A significant relationship between social connectedness and self-esteem was acknowledged, $r(227) = .414, p < .01$. This relationship shows that as levels of self-esteem increase, levels of social connectedness also increase.

Table 6

Pearson's Product Moment Correlations between the Dependent Measures (n = 227)

	Depression	Social Connectedness
Self Esteem	-.372**	.414**
Depression		-.619**

Note: $*\alpha = .05, ** p < .01$

Null Hypothesis 2: There will be no statistically significant differences in depression, social connectedness, and self-esteem scores between collegiate athletes versus non-collegiate athletes and between female versus male college students ages 18 to 24 attending Centenary College, nor an interaction between athlete status and gender.

Athlete Status

Null hypothesis 1 was tested and the findings identified that there were significant correlations between social connectedness, self-esteem, and depression. Two-way multivariate analyses of variance (MANOVA) were then conducted for athlete status (collegiate athlete versus non-collegiate athlete) and gender on the dependent measures. Multivariate test results, as shown in Table 7, indicated a significant main effect for athlete status, $F(3, 223) = 5.61$, $p < .01$, revealing that there were differences between collegiate athletes and non-collegiate athletes on all three variables. As expected, collegiate athletes ($M = 15.85$) had greater self-esteem than non-collegiate athletes ($M = 15.32$), $F(3, 223) = 7.49$, $p < .01$. Collegiate athletes ($M = 97.20$) also had significantly greater social connectedness than non-collegiate athletes ($M = 89.57$), $F(3, 223) = 14.95$, $p < .001$. What is more, collegiate athletes ($M = 13.78$) had lower depression than non-collegiate athletes ($M = 16.72$), $F(3, 223) = 4.76$, $p < .05$.

Gender

MANOVA on the three dependent measures between males and females revealed a significant main effect for gender, $F(3, 223) = 3.69$, $p < .05$. Examination of the analyses revealed significant differences between female versus male college students on the depression variable, $F(3, 223) = 5.70$, $p < .05$. Female college students ($M = 16.69$)

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had higher levels of depression than male college students (M = 13.41). Males and

females did not significantly differ on self-esteem or social connectedness; nor was there

a significant interaction effect between athlete status and gender, F = .23, p = .873.

Table 7

Average Scores on Self-Esteem, Depression, and Social Connectedness between Athletes and Non-Athletes, and Male and Female Students (n = 227)

	Non-Athlete			Collegiate Athlete			All Students		
	n	Mean	SD	*n*	Mean	SD	*n*	Mean	SD
Self Esteem [a]									
Male	44	15.23	1.65	47	15.89	1.45	91	15.57	1.58
Female	79	15.37	1.56	57	15.81	1.25	136	15.55	1.45
Total	123	15.32	1.59	104	15.85	1.33	227	15.56	1.50
Depression [ab]									
Male	44	15.23	9.58	47	11.70	6.86	91	13.41	8.43
Female	79	17.56	9.90	57	15.49	10.34	136	16.69	10.10
Total	123	16.72	9.81	104	13.78	9.09	227	15.37	9.58
Social Connectedness [a]									
Male	44	89.11	15.34	47	96.91	12.69	91	93.14	14.49
Female	79	89.82	15.91	57	97.44	13.71	136	93.01	15.44
Total	123	89.57	15.65	104	97.20	13.20	227	93.07	15.04

Note: Means are from two way (Athlete Status X Gender) MANOVA, multivariate
effects: athlete status $F(3, 223) = 5.61$, $p < .01$; gender $F(3, 223) = 3.69$, $p < .05$;
interaction $F(3, 223) = .23$, *ns*;
[a] significant univariate main effect for athlete status
[b] significant univariate main effect for gender

Null Hypothesis 3: GPA, levels of weekly exercise, gender, athlete status, self-esteem, and social connectedness will not be statistically significant predictors of depression in college students ages 18 to 24 attending Centenary College.

Preliminary Analyses for Null Hypothesis 3

As illustrated in Table 8, using Pearson's Product Moment Correlations, there exists a statistically significant inverse relationship between depression and sleep, $r(227) = -.273, p < .01$. As the number of rested nights of sleep per week increased, depression decreased. While sleep habits were not a variable of focus of the present study, sleep was included as a predictor in the multiple regression, and will be further discussed in Chapter V. Sleep was also a positively correlated significant relationship to both self-esteem, $r(227) = .153, p < .05$, and social connectedness, $r(227) = .182, p < .01$. This relationship implies that as rested nights of sleep per week increase, levels of self-esteem and social connectedness increase as well.

Moderate to vigorous aerobic exercise (days per week) was a positively correlated significant relationship to both self-esteem, $r(227) = -.141, p < .05$, and social connectedness, $r(227) = .221, p < .01$. This finding indicates that more days per week of aerobic exercise is associated with increased levels of self-esteem and social connectedness. However, the relationship between weekly level of aerobic exercise and depression did not yield statistically significant results; nor did weekly level of strength training and depression. Pearson's Product Moment Correlations revealed a statistically significant relationship between strength training (days per week) and social

connectedness, $r(227) = .205, p < .01$, implying that as the number of days per week strength training increased, so did levels of social connectedness (see Table 8).

Table 8

Person's Product Moment Correlations between the Dependent Measure and Personal Characteristics of Respondents (n = 227)

	Depression	Self Esteem	Social Connectedness
Age	-.038	-.005	.117
GPA	-.082	.061	.042
Days of Aerobic Exercise/Wk	-.119	.141*	.221**
Days of Strength Training/Wk	-.071	.106	.205**
Days of Rested Sleep/Wk	-.273**	.153*	.182**

Note: $* p < .05, ** p < .01$

Two-way MANOVA was conducted on athlete status and gender on the following dependent measures: age, GPA, weekly levels of aerobic exercise and strength training, days of rested sleep per week, and BMI. Examination of the analyses revealed a significant main effect for BMI, $F(3, 223) = 8.65, p < .01$. As presented in Table 9, the results showed that in this sample of college students, male BMI ($M = 25.22$) were greater than female BMI ($M = 23.70$).

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Table 9

Average Personal Characteristics between Male and Female Students (n = 227)

		Male			Female			
	n	Mean	SD	*n*	Mean	SD	*F*	*p*
Age	90	20.04	1.44	135	19.75	1.24	2.93	.088
GPA	90	2.98	0.67	135	3.16	0.58	3.38	.067
Days of Aerobic Exercise/Wk	90	2.64	1.11	135	2.31	0.99	3.11	.079
Days of Strength Training/Wk	90	2.11	0.97	135	1.87	0.88	2.03	.155
Days of Rested Sleep/Wk	90	2.18	0.87	135	2.16	0.75	.04	.853
BMI	90	25.22	4.46	135	23.70	4.41	8.65	.004

When comparing collegiate athletes (N = 104) and non-collegiate athletes (N = 123) in the present study, univariate analyses revealed a significant main effect for aerobic exercise, strength training, and rested sleep, as well as GPA and BMI, as follows:

- Athletes displayed greater days per week of:
  - Aerobic exercise ($M = 3.10$; non-athlete $M = 1.89$), $F(3, 223) = 101.61$, $p < .001$;

- o Strength training ($M = 2.43$; non-athlete $M = 1.57$), $F(3, 223) = 58.98$, $p < .001$;

- o Rested sleep ($M = 2.37$; non-athlete $M = 1.99$), $F(3, 223) = 12.15$, $p = .001$ (see Table 10).

- Non-collegiate athletes had higher:

  - o GPA ($M = 3.25$; athlete $M = 2.90$), $F(3, 223) = 19.68$, $p < .001$

  - o BMI ($M = 25.23$; athlete $M = 23.21$), $F(3, 223) = 15.11$, $p < .001$.

Table 10

Average Personal Characteristics between Athletes and Non-Athletes (n = 227)

	Non-Athlete			Collegiate Athlete				
	n	Mean	SD	n	Mean	SD	F	p
Age	122	19.89	1.41	103	19.83	1.25	.12	.731
GPA	122	3.25	0.60	103	2.90	0.61	19.68	.000
Days of Aerobic Exercise/Wk	122	1.89	0.90	103	3.10	0.82	101.6	.000
Days of Strength Training/Wk	122	1.57	0.82	103	2.43	0.81	58.98	.000
Days of Rested Sleep/Wk	122	1.99	0.78	103	2.37	0.78	12.15	.001
BMI	122	25.23	5.47	103	23.21	2.51	15.11	.000

Final Analysis for Null Hypothesis 3

A stepwise multiple regression was conducted to determine predictors of depression in college students based on the preliminary results illustrated in Tables 8 – 10. Overall, the variables social connectedness, gender, sleep, and self-esteem were significant in predicting depression, $F(3, 223) = 45.25$, $p < .001$, and accounted for 45% of the variance. The following results given take into account when controlling for the other variables:

First, an increase in social connectedness predicted a decrease in depression (*Beta* = -.539, $p < .001$). Second, being a female compared to being a male college student, predicted an increase in depression (*Beta* = .163, $p = .001$). Third, an increase in days per week of rested sleep predicted a decrease in depression (*Beta* = -.154, $p < .01$). And forth, an increase in self-esteem predicted a decrease in depression (*Beta* = -.124, $p < .05$) (see Table 11).

In the exploration of null hypothesis 3, the premise was supported because gender, self-esteem, social connectedness, and sleep were significant predictors of depression in college students ages 18 to 24 attending Centenary College. The same analysis showed that GPA, level of weekly exercise, and athlete status were not statistically significant predictors of depression when compared to the aforementioned variables.

Table 11

Stepwise Multiple Regressions Predicting Depression in College Students Ages 18 to 24

	B	SE	Beta	*t*	*p*
Model 1					
Social Connectedness**	-.394	.03	-.619	-11.82	.000
Model 2					
Social Connectedness**	-.394	.03	-.618	-12.05	.000
Gender**	3.234	1.00	.166	3.23	.001
Model 3					
Social Connectedness**	-.375	.03	-.588	-11.51	.000
Gender**	3.194	.98	.164	3.26	.001
Sleep**	-1.978	.62	-.164	-3.21	.002
Model 4					
Social Connectedness**	-.343	.04	-.539	-9.76	.000
Gender**	3.185	.97	.163	3.28	.001
Sleep**	-1.858	.61	-.154	-3.03	.003
Self Esteem*	-.793	.35	-.124	-2.26	.025

Note: *α = .05, ** $p < .01$

Additional Findings

Additional analyses were conducted to test for differences and examine

relationships between the other demographic variables measured in the study.

Greek Status

One-way MANOVA on the three scales between Greek (members of a fraternity or sorority) and non-Greek students revealed a significant relationship, $F(3, 223) = 7.05$, $p = .008$. As illustrated in Table 12, college students involved in a fraternity or sorority had lower self-esteem ($M = 15.20$) than non-Greek students ($M = 15.75$).

Table 12

Average Scores of the Dependent Variables between Greek Students and Non-Greek Students (n = 227)

		Greek Status						
		Yes			No			
	n	Mean	SD	n	Mean	SD	F	p
Self Esteem	79	15.20	1.52	148	15.75	1.46	7.05	.008**
Depression	79	15.10	8.30	148	15.52	10.22	.10	.754
Social Connectedness	79	93.34	14.66	148	92.92	15.28	.04	.841

Note: *$\alpha = .05$, ** $p < .01$

Examination of the analyses also identified that college students involved in a fraternity or sorority had higher GPAs, lower levels of weekly aerobic exercise and strength training, and less days of rested sleep than non-Greek students (see Table 13).

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Table 13

Average Personal Characteristics between Greek Students and Non-Greek

Students (n = 227)

		Greek Status						
		Yes			No			
	n	Mean	SD	n	Mean	SD	F	p
Age	79	19.92	1.20	146	19.84	1.40	.23	.636
GPA	79	3.26	0.59	146	3.00	0.63	9.5	.002**
Days of Aerobic Exercise/Wk	79	2.23	0.95	1146	2.56	1.09	5.27	.023*
Days of Strength Training/Wk	79	1.66	0.70	146	2.13	0.98	14.28	.000**
Days of Rested Sleep/Wk	79	2.03	0.75	146	2.24	0.82	3.74	.054*
BMI	79	24.44	5.36	146	24.23	3.94	.11	.745

Note: *α = .05, ** $p < .01$

Ethnicity

One-way Analyses of Variance (ANOVA) of student ethnicity on self-esteem, social connectedness, and depression revealed a significant difference between ethnic groups and self-esteem, $F(2, 208) = 4.68$, $p = .01$. As shown in Table 14, Sheffé post hoc tests revealed that while Whites, Hispanics, and Blacks did not significantly differ on depression, $F(2, 208) = .65$, $p = .52$, black college students had significantly lower self-

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esteem (M = 14.73) than both white (M = 15.55) and Hispanic (M = 16.11) college

students (p < .01).

Table 14

Average Scores of the Dependent Measures between Ethnic Groups

	White			Black			Hispanic or Latino		
	n	Mean	SD	n	Mean	SD	n	Mean	SD
Self Esteem*	172	15.55[a]	1.47	22	14.73[b]	1.70	18	16.11[a]	1.13
Depression	172	15.44	9.86	22	17.23	8.12	18	13.72	9.85
Social Connectedness	172	92.99	15.74	22	87.91	12.34	18	98.56	8.71

Note: *Significant univariate main effect for ethnicity.
[ab] Row means with different superscripts, differed significantly by Sheffé post hoc test, p < .05.

Illustrated in Table 15, Sheffé post hoc tests also revealed that black college

students had lower GPA (M = 2.39) than both whites (M = 3.19) and Hispanics (M =

2.85) (p < .001). In addition, black college students had greater BMI (M = 26.71) than

white (M = 24.03) college students (p < .05). No significant differences were found

between the three ethnic groups on level of weekly of aerobic exercise, $F(2, 208)$ = .33,

strength training, $F(2, 208)$ = .46, or rested sleep, $F(2, 208)$ = .97.

Table 15

Average Personal Characteristics between Ethnic Groups

		White			Black			Hispanic or Latino	
	n	Mean	SD	*n*	Mean	SD	*n*	Mean	SD
Age	172	19.88	1.27	22	19.64	1.43	18	20.00	1.08
GPA*	172	3.19 [a]	0.57	22	2.39 [b]	0.58	18	2.85 [a]	0.56
Days of Aerobic Exercise/Wk	172	2.44	1.01	22	2.23	1.11	18	2.72	1.27
Days of Strength Training/Wk	172	1.95	0.90	22	2.14	0.99	18	2.17	1.04
Days of Rested Sleep/Wk	172	2.20	0.80	22	2.23	0.81	18	2.17	0.86
BMI*	170	24.03 [a]	4.12	22	26.71 [b]	6.51	18	24.63 [ab]	4.92

Note: *Significant univariate main effect for ethnicity.
[ab] Row means with different superscripts, differed significantly by Sheffé post hoc test, $p < .05$.

CHAPTER V

DISCUSSION

Overall, the present study found a significant level of depression in this cohort of college students, ages 18 to 24 attending Centenary College. Significant relationships were found between social connectedness, self-esteem, and depression. In this study, collegiate athletes were found to have significantly greater self-esteem and social connectedness than non-collegiate athletes. Collegiate athletes were also found to have significantly lower depression than non-collegiate athletes. However, athlete status was not a statistically significant predictor of depression when compared to the other variables: gender, self-esteem, social connectedness, and sleep. This study's results contribute to our understanding of factors that predict the development of depression symptomatology among college students. This chapter will recapitulate the research study and discuss the findings presented in Chapter IV. The following areas of discussion will ensue: summary, limitations, conclusions, discussion and implications, and recommendations.

Summary

The purpose of this study was to determine if there were significant differences between collegiate athletes versus non-collegiate athletes, and female college students versus male college students, on levels of self-esteem, social connectedness, and depression. The secondary purpose was to determine if the variables of gender and

athlete status and the interaction between the two with the other variables of GPA, self-esteem, levels of weekly exercise, and social connectedness were predictors of depression.

Collegiate athletes and non-collegiate athletes, ages 18 to 24 years old, attending Centenary College of Louisiana, comprised the convenience sample of participants. Out of the 232 participants that volunteered to complete the packet of surveys, 227 were suitable for data analyses.

Data collection took place during the regularly scheduled lunch and dinner operating hours in the College's cafeteria on four sampling dates: Tuesday, March 20, 2007 through Friday, March 23, 2007. Data collection proceeded accordingly: (1) students approached the information table and were personally informed of the research study by the researcher; (2) students who agreed to participate signed an informed consent form, acknowledging that their participation was anonymous, voluntary, and confidential; (3) students returned the informed consent to the researcher and were handed a packet of surveys; (4) surveys were completed inside the private Centenary room; (5) students returned the sealed packet of surveys to the researcher; (6) data was identified with a unique ID code.

The results of this study contribute to the limited research within the empirical knowledge base regarding depression among collegiate athletes. The findings of this study are compatible with the current research and established literature highlighting an alarming prevalence of depression among college students (ACHA, 2005; Benton, Robertson, Tseng, Newton, & Benton, 2003; Furr, Westefeld, McConnell, & Jenkins,

2001). The primary outcome of this study was that, although collegiate athletes were found to have significantly lower levels of depression than non-collegiate athletes, athlete status was not a statistically significant predictor of depression when compared to the other variables under investigation including gender, self-esteem, and social connectedness. Female college students had higher levels of depression than male college students. Furthermore, lower levels of self-esteem and social connectedness predicted higher levels of depression in this college population.

An important finding in this study was that collegiate athletes displayed greater days per week of rested sleep than non-collegiate athletes. This outcome is contrary to the logical assumptions in the literature that collegiate athletes sleep fewer hours than non-athletes (Gavin, 2006). Currently, sleep habits of collegiate athletes is an underrepresented area of research. The researcher may want to follow up with an established sleep quality instrument or qualitative interviews to further examine sleep habits by comparing quality and patterns of sleep among athletes and non-athletes. The current finding was consistent, however, with current research that reveals lack of sleep is directly correlated to depression (Brown, Buboltz, & Soper, 2006; Cukrowiez et al., 2006; Voelker, 2004).

Results of this study indicate that depression is a significant health concern on college campuses. Health educators and counseling services should be aware of factors that predict the development of depression symptomatology in college students in order to improve their mental health, academic performance, and social well-being.

Limitations

Several limitations exist within this study and need to be addressed. First, a convenience sample was utilized to survey participants; therefore, the study reflects one college campus' population. The data came from a small, private, liberal arts college in the south. The college is associated with the Methodist church. It is also the smallest Division I athletics institution in the nation, only tallying 16 collegiate sport teams. Furthermore, there was a larger proportion of women represented in the sample; therefore, the results cannot be generalized to college students or collegiate athletes nationally.

Second, this study is limited by the use of the survey design and self-report data, which are subject to several sources of error including recall and social desirability biases. Although, self-report surveys are common in studies of this nature and are generally considered reliable, biases can lead to either over- or under-reporting measures, such as height, weight, GPA, and levels of exercise, sleep, self-esteem, social connectedness, and depression. This study also employed a cross-sectional design. The CES-D, RSES, and SCS-R used to collect data only provide a snap-shot of a college student's depression, self-esteem, and social connectedness at one moment in time, as defined by the limitations of each scale.

The location for data collection in this study could also be a possible methodological weakness resulting in a reactive effect of procedures. Although efforts were made to provide standardization of survey methods, the researcher's presence in the cafeteria or the participants' awareness of being part of a research study may have limited

anonymity or evoked interviewer-induced bias. Furthermore, since the survey collection method utilized central location intercept interviews, which only tapped into students eating lunch or dinner in the cafeteria, and the sample consisted of volunteers, only those respondents receptive to participate and motivated to complete the packet of surveys became sources of data.

Another limitation in this study is the small sample size. The researcher was unable to compare differences between the three dependent measures among individual and team sport athletes. However, based on the total student population of this college, participants in this sample ($N = 227$) far exceeded the minimum sample size ($N = 128$) needed for a moderate effect size to achieve acceptable statistical power.

Conclusions

As shown in Table 16, null hypothesis 1 was not supported and null hypotheses 2 and 3 were partially rejected. This study concluded that (1) there are significant relationships between the variables depression, self-esteem, and social connectedness, (2) collegiate athletes tend to have greater levels of self-esteem and social connectedness, and lower levels of depression than non-collegiate athletes, and (3) being female and having low self-esteem and social connectedness are significant predictors of depression in college students.

Table 16

Conclusion of Results

	Not rejected	*Rejected*
Hypothesis 1		X
Hypothesis 2		
Athlete Status and Self-Esteem		X
Athlete Status and Social Connectedness		X
Athlete Status and Depression		X
Gender and Self-Esteem	X	
Gender and Social Connectedness	X	
Gender and Depression		X
Hypothesis 3		
GPA	X	
Aerobic Exercise	X	
Sleep		X
Gender		X
Athlete Status	X	
Self-Esteem		X
Social Connectedness		X

Discussion and Implications

Demographic Findings

Results from this study indicate a disturbing prevalence of depression among the cohort of college participants in this study; 33.5% had clinically significant levels of depression. However, this figure is actually low when compared to other studies of depression on college campuses. Recent literature indicates that depression on college campuses ranges from 40.7% (Benton, Robertson, Tseng, Newton, & Benton, 2003) to 59% (ACHA, 2005; Furr, Westefeld, McConnell, & Jenkins, 2001). Various depression instruments have been used as evaluation tools, therefore the results are difficult to compare. Nevertheless, the prevalence data from this study is most consistent with the 46% depression rate identified at another small, private, liberal arts college (Furr, Westefeld, McConnell, & Jenkins, 2001). In their comparison study of four dissimilar colleges, Furr, Westefeld, McConnell, and Jenkins (2001) noted that students at the small college (N =1,800) may have been more protected from depression symptomatology than students at the state university with 17,000 students (55%) or the community college with 4,000 students (59%) because of its religious-affiliation and increased opportunities for spiritual fellowship. A follow-up study that explores college students' levels of depression and religiosity for those attending a secular campus versus a religious campus is recommended.

As reported earlier, the prevalence of depression is greater among females than males. As demonstrated in Le, Munoz, Ippen, and Stoddard (2003), women are twice as

likely to be diagnosed and treated for major depression then men. No differences were found in levels of depression between white, black, or Hispanic college students.

Other demographic findings from this study revealed that males were greater than females on BMI in this sample. Also of interest, black college students had lower levels of self-esteem than both white and Hispanic students; fraternity and sorority members had lower levels of self-esteem than non-Greek students. Because fraternities and sororities are centered on communal associations, it is logical to assume their members would have enhanced levels of social connectedness, and therefore, higher levels of self-esteem. Further research is needed on the psychological state of self-esteem of both Greek and black college students since the variable is both a symptom and predictor of depression.

Social Connectedness, Self-Esteem, and Depression

Statistically significant correlations were found between all three measures. As expected, when levels of self-esteem increase, levels of depression decrease. One of the most highly regarded conclusions in the literature is the inverse relationship between self-esteem and depression in people of all ages (Rosenberg, Schooler, & Schoenbach, 1985). The inverse correlation between depression and social connectedness found in this study also supports evidence in the literature that has shown people with low levels of social connectedness report more psychological distress including depression and low self-esteem, whereas people with high levels of social connectedness are protected from depressive symptomatology (Baumeister & Leary, 1995). Accordingly, current research identifies the linear correlation between social connectedness and self-esteem, which is

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supported by this study such that increased social connectedness is related to increased self-esteem.

Athlete Status and Gender

There were statistically significant differences between collegiate athletes and non-collegiate athletes on levels of self-esteem, social connectedness, and depression. First, athletes in this study had greater levels of perceived self-esteem than non-athletes. This result agrees with the substantiated research citing the relationship between sport participation and self-esteem (Bowker, 2006; Dishman et al., 2006; Kumar, Pathak, & Thakur, 1985). This finding also supports the assumption, based on the EXSEM, that collegiate athletes would be placed at a higher level of the hierarchy model due to their perceived competence with a particular physical ability (Sonstroem & Morgan, 1989). According to Rosenberg, Schooler, and Schoenbach (1989), self-esteem is often based on external sources including recognition, approval, and attention within an area of achievement. Health educators and college support staff should focus on socially marketed programs that fulfill self-interests and increase external contingencies of self-worth in all college students.

Second, data from this study supports the theory that social networks and support are the foundation of most athletic teams. According to Lee, Draper, and Lee (2001), teen and college years are "critical developmental periods" for social connectedness and peer and group associations allow individuals to "identify with others who share similarities in appearance, interests and talents which draw people closer together and validate a sense of connectedness" (p. 311). In the present study, collegiate athletes had

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greater levels of perceived social connectedness than non-collegiate athletes. This phenomenon should be explored further with other peer and group associations among college students.

Third, data from this study contradicts the assumption that athletes may be at similar or higher risk for depression than their peers (Maniar, Chamberlain, & Moore, 2005). The collegiate athletes in this population had lower levels of depression symptomatology than the non-collegiate athletes. This outcome can be associated with their greater levels of self-esteem and social connectedness. This supports the literature insinuating that the psychosocial outcomes of sport participation positively influence mental health outcomes which can buffer symptoms of depression (Lee, Draper, & Lee, 2001). This finding indicates that social and mental health education programs do not need to be customized for collegiate athletes. Campus administrators should acknowledge that depression among all college students is a significant concern, but even more so for students not involved in intercollegiate athletics. Health promotion programs should focus on educational activities that increase levels of social connectedness and self-esteem for the general student body.

In terms of gender, the results of this study found a statistically significant difference in depression between female and male college students. As stated earlier, females have greater levels of depression than males, which is supported by prevalence data in the literature (NIMH, 2006). Males and females did not significantly differ on levels of perceived self-esteem or social connectedness. There was no significant interaction effect between athlete status and gender. The need for more research on

depression among female college students is obvious. In particular, researchers should explore factors that lead to depression among women in college. Further research should also focus on how to help female college students combat symptoms of depression in order to provide depression-related intervention strategies targeted at, and tailored for, their unique needs.

Predictors of Depression in College Students

As reported in Chapter IV, statistically significant differences in personal characteristic were identified between collegiate athletes and non-collegiate athletes. In this study, non-collegiate athletes had higher GPAs, in agreement with a recent report that collegiate athletes tend to "under-perform academically" (Shulman & Bowen, 2001, p. 270). As expected, this study found that collegiate athletes had lower BMI's, and participated in more days per week of aerobic and strength training exercise. Similar to Weyerer (1992), physically active people are less likely to suffer from depression symptomatology than inactive individuals. Numerous studies have shown that both consistent aerobic and strength training exercise significantly improves self-esteem and reduces depression (Harne & Bixby, 2005; Melnick & Mookerjee, 1991; Tucker & Maxwell, 1992). In this study, days per week of aerobic exercise was significantly correlated to both self-esteem and social connectedness. Days per week of strength training was significantly correlated to social connectedness, indicating that increased days per week of strength training was related to increased levels of social connectedness. In addition, results from this study reveal that collegiate athletes receive more days per week of rested sleep than non-collegiate athletes. This finding is inconsistent with the

literature (Gavin, 2006) and should be explored further. Of interest, sleep was significantly correlated to both self-esteem and social connectedness. Therefore, these results have implications for the development of exercise and sleep intervention and wellness programs on college campuses to be used as both preventative and treatment methods for depression.

Stepwise Multiple Regression Analysis indicated that three independent variables under study- gender, self-esteem, and social connectedness- were significant predictors of depression in college students. One other variable, days per week of rested sleep, was also identified as a significant contributor to depression in this study. Therefore sleep was included as a predictor in the multiple regressions as discussed in Chapter IV.

First, being female compared to being male has been repeatedly identified to predict an increase in depression. Second, a decrease in self-esteem predicted an increase in depression. This finding is consistent with the established research that low self-esteem is a major risk factor for depression (Garber, Robinson, & Valentiner, 1997; MacPhee & Andrews, 2006; Muris, Schmidt, Lambrichs, & Meesters, 2001). Third, in accordance with the literature, a decrease in social connectedness predicted an increase in depression. Similar to Williams and Galliher (2006), social connectedness is a highly significant variable when assessing depression in college students. Therefore, the positive influence of a social network and of team support may be the variable that most profoundly protects collegiate athletes from depressive symptomatology even though they face the same college stressors that non-athletes face.

In addition, a noteworthy finding from this study reveals that when controlling for the other variables, increased days per week of rested sleep predicts a decrease in depression. College students are documented in the literature as being most acutely affected by sleep difficulties when compared to other populations (Bubolz, Brown, & Soper, 2001; Jensen, 2003). Voelker (2004) recently reported that stress, together with sleep loss and substance abuse, is recipe for clinical depression. Nationwide, 11% of college students report getting "a good night's sleep" (ACHA, 2005). In this study, only 5.3% of the participants reported getting six to seven days of quality sleep each week so that they "felt rested when they woke up in the morning"; 19.4% reported "feeling rested" zero to one day(s) per week. Sleep problems have been identified as one of the top three impediments to academic achievement on college campuses (ACHA, 2005). Since lack of sleep increases the risk of depression, behavioral intervention sleep programs should be implemented in life quarters such as the residence halls and individual dorm rooms on college campuses.

In conclusion, the four variables- gender, self-esteem, social connectedness, and days per week of rested sleep- were significant predictors of depression in college students and explained 45% of the variance in depression. On the other hand, GPA was not a statistically significant predictor of depression. Although a main effect of level of weekly exercise and athlete status were found, the variables were not statistically significant when compared to the aforementioned measures.

Recommendations

Based on the study's results, several recommendations are proposed. First, it is recommended that further research be conducted on depression among collegiate athletes. Although this study found that collegiate athletes in this sample had lower levels of depression than non-collegiate athletes, the study should be replicated on other college campuses and their respective athletic institutions. Doing so would facilitate a generalization of the results and provide an advanced understanding of depression among collegiate athletes. Future research is also recommended on the predictors of depression found in this study that include being female, and having low levels of self-esteem, social connectedness, and days per week of rested sleep.

Second, based on the study's results, reducing the prevalence of depression in college students should be a public health priority. According to data from the ACHA (2005), health educators and the staff of health services are the most believable sources of health information reported by college students. Therefore, these faculty and staff members need to be aware of the prevalence of depression on their respective campus and direct their attention to depression symptomatology, prevention, diagnosis, and treatment methods. Small group therapeutic sessions that promote social connectedness led by health services or health educators should be implemented and include goal setting, symptoms of depression, assertiveness, and relaxation/sleep methods. Such sessions have proven to significantly increase levels of self-esteem and decrease levels of depression in controlled experimental studies on women (Gordan, 1992). Penden, Rayens, Hall, and Beebe (2001) also suggest group sessions that include cognitive-

behavioral, relaxation, and affirmative techniques to decrease negative thinking, increase self-esteem, and decrease depression.

It is recommended that health educators and health services use either the empowerment model or the diffusion of innovation theory to provide tailored communication to college students' health needs. Seeking group therapy or individual counseling needs to become a social normative on college campuses. Since most college students do have convenient access to health and counseling services, social marketing campaigns need to be implemented to help students overcome barriers, including shame and suppression, to feel more comfortable using the campus services. Social marketing campaigns can help dispel the myth that feelings of hopelessness, loneliness, and lack of self-worth are signs of personal weakness, but rather, are symptoms of depression which can effectively be treated. "Toilet talk", monthly newsletters located in residence hall bathrooms, can be a form of social marketing with the purpose of informing students of depression symptomatology, prevalence data, and prevention and treatment options available on campus. Peer health educators, such as students in the Allied Health Organization and Resident Hall Assistants, can be trained as health service liaisons to support and encourage the use of counseling services among students. A health education website should also be conveniently linked to the college's main webpage. Such a site can be used to provide valuable information, online screening tools, as well as on and off campus health resources.

College campuses need to recognize the importance of a healthy mind and body, and specifically address how depression impacts academic performance, school and life

satisfaction, and social relationships. The college students in this convenience sample currently do not have access to a general program that enhances their culture in the areas of health and wellness. This may be one reason that the college under study, as well as why many other universities across the U.S., are identifying such high rates of depression among their students. Therefore, a final recommendation is to offer a program for building comprehensive health promotion initiatives to not only improve the students' experience at college, but to improve their quality of life for years to come. The Wellness Stampede, a health promotion program at the University of Nebraska Omaha (UNO), exemplifies a best practice model (Wellness Councils of America [WELCOA], 2006) that other colleges could use to map and match specific components. The Wellness Stampede sponsors campus-wide programs and diverse activities benefiting students, faculty, and staff in developing knowledge, attitudes, and beliefs to change behavior, resulting in healthier and more socially connected lifestyles. The Wellness Stampede is based upon the PRECEDE-PROCEED model; therefore, community needs assessments, utilization of formal objectives, and subsequent summative evaluation include sound principles that can be modified to provide the basis for planning, implementation, and evaluation for other college programs. The Wellness Stampede incorporates leadership and participation from several related departments including Health and Physical Education, Campus Recreation, and Student Health Services (UNO, 2006). A collaboration of these departments can help implement depression screenings, exercise programs, sleep interventions, and community activities to increases levels of health and social connectedness campus-wide.

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The Wellness Stampede uses "Mav Tracks", a computer-based program to track individual participant activities and achievement. "Hoof Prints" is a point system that awards students for participating in approved activities such as aerobic exercise and/or yoga classes, health screenings, campus health fairs, and sleep treatment programs. Such reward systems not only allow students to make behavioral changes and increase social interaction, but according to the EXSEM, their participation will also enhance self-perception, leading to enhanced levels of self-esteem. Reducing the prevalence of depression among college students must involve a multidimensional, comprehensive, and collaborative approach by the entire campus community in order to combat the multifaceted correlates and impact of depression.

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APPENDIX A

Informed Consent

INFORMED CONSENT

PRINCIPAL INVESTIGATOR: Shelley N. Armstrong, MAT

TITLE OF PROJECT: Social connectedness, self-esteem, and depression symptomatology among collegiate athletes versus non-collegiate athletes ages 18 to 23: A comparative study.

This Informed Consent will explain about being a research participant in a study. It is important that you read this material carefully and then decide if you wish to be a volunteer.

PURPOSE: This purpose of this study is to determine the prevalence of depression at Centenary College of Louisiana and the impact that gender, collegiate sport participation, self-esteem and social connectedness has on depression-related symptoms.

DURATION: Approximately 20 minutes to fill out the demographic profile and three questionnaires.

PROCEDURES: After IRB approval is obtained from Centenary College and Texas Woman's University, undergraduate students, 18 years and older, enrolled for the spring 2007 semester at Centenary College will be recruited to participate by signs posted in the cafeteria. Volunteers will enter the private Centenary Room where they will be asked to participate, and be debriefed of the study, by the PI. Informed consent will be obtained from all participants first and will be placed in a secure case. The packet of questionnaires will then be distributed. Participation in the study will be voluntary and anonymous. The survey will take approximately 20 minutes to complete. A raffle ticket will be given to all volunteer participants that complete the study. Those who cho e not to participate may return the packet with the questionnaires unanswered, without penalty.

POSSIBLE RISKS/DISCOMFORTS: In any study, there is a chance of breach of confidentiality, however, no identifiable information will be collected or tored. Therefore, there is no foreseen no harm that could result from your participation in this study.

POSSIBLE BENEFITS: The possible benefits of your participation are upporting the research practices of Centenary College and principal investigator. You will also receive a raffle ticket toward gift certificate drawings for your research participation.

CONFIDENTIALITY: Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be stored in a locked cabinet in Office 106 in Haynes Fitness Center and available only to the principle investigator for at least three for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a participant. Although your rights and privacy will be maintained, the personnel particular to this research (Shelley Armstrong) have access to the study records. Your information will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above.

FINANCIAL COSTS: None.

CONTACT FOR QUESTIONS: If you have any questions or concerns, you may contact Shelley Armstrong at (318) 869-5277.

VOLUNTARY PARTICIPATION: Participation in this research experiment is voluntary. You are free to discontinue your participation in the research study at any time with no penalty to yourself. While completing the questionnaires, you may quit at any time by not completing the questionnaire/s or you may chose not to answer certain questions. If you have any concerns about your participation in this research study, please address them to the PI at any time.

By signing below, you confirm that you have read or had this document read to you and you freely and voluntarily choose to be in this research project.

PRINCIPAL INVESTIGATOR: _____

DATE

_____

SIGNATURE OF VOLUNTEER   DATE

APPENDIX B

Demographic Profile

1. How old are you? _____ years

2. What is your sex? (please check one)
   - Male
   - Female

3. What is your height?
   _____ Ft. _____ In.

4. What is your weight in pounds?
   _____ Pounds

5. Year in school? (please check one)
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Other _____

6. Are you a full-time student?
   - Yes
   - No

7. How do you describe yourself?
   - White – not Hispanic
   - Black – not Hispanic
   - Hispanic or Latino
   - Asian or Pacific Islander
   - American Indian
   - Other

8. Are you an international student?
   - Yes
   - No

7. What is your current relationship status?
(please check one)
   - Single
   - Married
   - Engaged or in a committed dating relationship
   - Separated
   - Divorced
   - Widowed

8. Where do you currently live? (check one)
   - Campus residence hall
   - Fraternity or sorority house
   - Off-campus housing
   - Parent or guardian's home
   - Other _____

9. Are you a member of a social fraternity or sorority?
   - Yes
   - No

10. Are you a member of a NCAA Division I varsity athletics team?
    - Yes
      - If yes, what sport?
        _____
    - No

11. What is your current Grade Point Average (GPA)? _____
    - 4.0 (A average)
    - 3.0 (B average)
    - 2.0 (C average)
    - 1.0 (D average)
    - 0.0 (F average)

12. On how many of the past 7 days did you:

A. Participate in vigorous exercise for at least 20 minutes or moderate exercise for at least 30 minutes?
   - 0-1 day(s)
   - 2-3 days
   - 4-5 days
   - 6-7 days

B. Do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting?
   - 0-1 day(s)
   - 2-3 days
   - 4-5 days
   - 6-7 days

C. Get enough sleep so that you felt rested when you woke up in the morning?
   - 0-1 day(s)
   - 2-3 days
   - 4-5 days
   - 6-7 days

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APPENDIX C

Center for Epidemiologic Studies Depression Scale (CES-D)

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week: *(circle ONE number on each line)*

During the past week...	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	All of the time (5-7 days)
1. I was bothered by things that don't usually bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family.	0	1	2	3
4. I felt that I was just as good as other people.	0	1	2	3
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	0	1	2	3
9. I thought my life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3
11. My sleep was restless.	0	1	2	3
12. I was happy.	0	1	2	3
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3
15. People were unfriendly.	0	1	2	3
16. I enjoyed life.	0	1	2	3
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not "get going".	0	1	2	3

APPENDIX D

Rosenberg Self-Esteem Scale (RSES)

Below is a list of statements dealing with your general feelings about yourself.
If you STRONGLY DISAGREE, circle SD. If you DISAGREE, circle D.
If you AGREE with the statement, circle A. If you STRONGLY AGREE, circle SA.

		STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1.	I feel that I'm a person of worth, at least on an equal plane with others.	SD	D	A	SA
2.	I feel that I have a number of good qualities.	SD	D	A	SA
3.	All in all, I am inclined to feel that I am a failure.**	SD	D	A	SA
4.	I am able to do things as well as most other people.	SD	D	A	SA
5.	I feel I do not have much to be proud of.**	SD	D	A	SA
6.	I take a positive attitude toward myself.	SD	D	A	SA
7.	On the whole, I am satisfied with myself.	SD	D	A	SA
8.	I wish I could have more respect for myself.**	SD	D	A	SA
9.	I certainly feel useless at times.**	SD	D	A	SA
10.	At times I think I am no good at all.**	SD	D	A	SA

APPENDIX E

Social Connectedness Scale-Revised (SCS-R)

	1 Strongly Disagree	2 Disagree	3 Mildly Disagree	4 Mildly Agree	5 Agree	6 Strongly Agree
1. I feel comfortable in the presence of strangers.	1	2	3	4	5	6
2. I am in tune with the world.	1	2	3	4	5	6
*3. Even among my friends, there is no sense of brother/sisterhood.	1	2	3	4	5	6
4. I fit in well in new situations.	1	2	3	4	5	6
5. I feel close to people.	1	2	3	4	5	6
*6. I feel disconnected from the world around me.	1	2	3	4	5	6
*7. Even around people I know, I don't feel that I really belong.	1	2	3	4	5	6
8. I see people as friendly and approachable.	1	2	3	4	5	6
*9. I feel like an outsider.	1	2	3	4	5	6
10. I feel understood by the people I know.	1	2	3	4	5	6
*11. I feel distant from people.	1	2	3	4	5	6
12. I am able to relate to my peers.	1	2	3	4	5	6
*13. I have little sense of togetherness with my peers.	1	2	3	4	5	6
14. I find myself actively involved in people's lives.	1	2	3	4	5	6
*15. I catch myself losing a sense of connectedness with society.	1	2	3	4	5	6
16. I am able to connect with other people.	1	2	3	4	5	6
*17. I see myself as a loner.	1	2	3	4	5	6
*18. I don't feel related to most people.	1	2	3	4	5	6
19. My friends feel like family.	1	2	3	4	5	6
*20. I don't feel I participate with anyone or any group.	1	2	3	4	5	6