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A COMPARISON OF THE LEVELS OF PHYSICAL ACTIVITY, SELF-ESTEEM,  
AND DEPRESSION AMONG SHELTERED BATTERED WOMEN,  
NONSHELTERED BATTERED WOMEN, AND NONBATTERED WOMEN

Tina M. Bozeman

A dissertation submitted to the Graduate College of  
Middle Tennessee State University  
in partial fulfillment of the requirements for the degree  
Doctor of Arts

December, 2001

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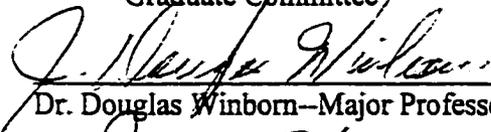
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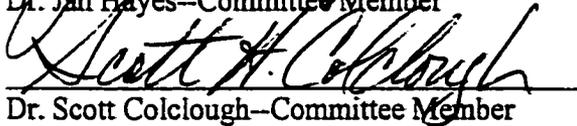
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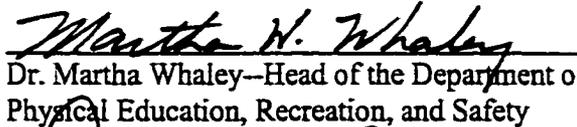
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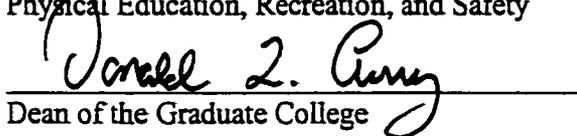
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## ABSTRACT

The present study compared the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women. An examination of the relationship of physical activity levels to self-esteem levels and depression levels among three categories of women was also conducted. The voluntary participants were 150 women representing three categories of women: sheltered battered ( $n = 50$ ), nonsheltered battered ( $n = 50$ ), and nonbattered ( $n = 50$ ). Each participant completed the following surveys: (1) demographic form, (2) Baecke Questionnaire of Habitual Physical Activity, (3) Rosenberg Self-Esteem Scale, and (4) Center for Epidemiologic Studies—Depression Scale.

The results of MANOVA showed overall significant differences among three categories of women (sheltered battered, nonsheltered battered, nonbattered) on three dependent variables (physical activity, self-esteem, depression) with an  $F(9, 353) = 253.73$ ,  $p < .05$ , Wilks' Lambda = .007. Further, univariate F tests showed significant differences on each of the three dependent variables with an  $F(3, 147) = 416.687$ ,  $p < .05$ ; an  $F(3, 147) = 1213.026$ ,  $p < .05$ ; and an  $F(3, 147) = 248.011$ ,  $p < .05$ , respectively.

Tukey post hoc tests revealed significant differences in physical activity levels between sheltered battered women and nonsheltered battered women ( $p < .05$ ) and between sheltered battered women and nonbattered women ( $p < .05$ ). The results of Tukey post hoc tests also showed significant differences in self-esteem levels between sheltered battered women and nonbattered women ( $p < .05$ ) and between nonsheltered battered women and nonbattered women ( $p < .05$ ).

Tukey post hoc tests revealed a significant difference ( $p < .05$ ) in depression levels between sheltered battered women and nonsheltered battered women. Significant differences were also identified between sheltered battered women and nonbattered women ( $p < .05$ ) and between nonsheltered battered women and nonbattered women ( $p < .05$ ) in depression.

Data from the sample as a whole showed a positive correlation ( $r = .283, p < .05$ ) between the levels of physical activity and self-esteem. Negative correlations existed between the levels of physical activity and depression ( $r = -.349, p < .05$ ) and between the levels of self-esteem and depression ( $r = -.699, p < .05$ ).

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## DEDICATION

I dedicate this dissertation to the late Dr. Wallace R. Brasen. Wally's infinite wisdom and genuine appreciation for education served as a strong and motivating force behind my completion of this project. Wally was not only an admirable scholar, but also a dear friend. As our doctoral diplomas hang beside one other, his memory remains a source of inspiration for my future endeavors.

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## CHAPTER I

### Introduction

Health scientists and physicians have advocated the use of exercise as a means of preventing and treating physical health problems such as obesity and hypertension (Greenberg & Oglesby, 1997; Morgan & Goldston, 1987). Morgan & Goldston also noted that during the past decade, exercise served as an effective means of preventing the onset of emotional problems. Furthermore, many health professionals viewed vigorous exercise as an effective treatment once mental health problems developed. The results of a 1983 survey revealed approximately 2000 primary-care physicians prescribed exercise as a treatment for depression (Morgan & Goldston). In addition, Brill & Cooper (1993) found 85 percent of 1,750 primary-care physicians surveyed in the United States regularly prescribed a walking exercise for the management of depression, anxiety, stress, and hostility.

Researchers at the National Institute of Mental Health (NIMH) identified the positive psychological benefits of participating in regular exercise in the early 1900s. Findings from the NIMH revealed participating in regular exercise decreased levels of mild to moderate depression, reduced anxiety and stress levels, and enhanced levels of self-esteem and psychological well-being (Bradley, 1996; Center for Disease Control and Prevention [CDC], 1999; Greenberg & Oglesby, 1997; Seraganian, 1993). An article

published in the Harvard Mental Health Letter (2000) cited exercise as an effective and inexpensive treatment for those patients who suffer from mild to moderate depression.

In addition to the relationship recognized between physical activity and depression levels, Hayes, Crocker, & Kowalski (1999) identified improved self-esteem as a psychological benefit to participating in physical activity. The influence from the physical domain on self-concept served as an important factor in determining levels of global self-worth. Bradley (1996) also noted the enhanced value to self-esteem as a result of physical activity participation.

One of the earliest contributions to psychological literature identifying the correlation between exercise and mental health appeared in a 1926 article published in the Occupational Therapy and Rehabilitation Journal. In the article, Vaux proposed that through promoting the nervous system and improving glandular secretion, exercise helped to relieve cases of depression, thus resulting in a “happier mood” (Craft & Landers, 1998, p. 339).

Martinsen (1990) noted the results of a 12-week study, conducted by Greist and his colleagues that included 28 mildly depressed outpatients. Subjects participated in either a running group or one of two types of individual psychotherapy. While the results of the study revealed significant reductions in depression scores for both groups, the running group demonstrated longer-lasting antidepressant effects than the individual psychotherapy participants. The pioneer work of Greist and his colleagues provided direction for future research regarding exercise as an effective treatment for depression (Martinsen; Osness, 1998).

According to Martinsen (1990), in the past 20 years health officials showed an increased interest in the psychological benefits associated with regular exercise participation. Martinsen also stated that depression served as a major health problem. Consequently, Martinsen suggested the association of depression and exercise as one possible explanation for the increased interest in the psychological benefits of exercise. Brill & Cooper (1993) concurred with Martinsen identifying depression as the “most prevalent mental illness in the United States” (p. 45). Brill & Cooper added that approximately 25 million Americans would suffer from severe depression at some time in their lives. Brill & Cooper also reported an increased risk of morbidity and mortality due to the increasing diagnosis of depressive symptoms and other mental disorders within society.

Walker (1984) specifically stated that depression was the primary mental health response for battered women. A study involving 164 moderately to severely depressed women showed battered women at a significantly greater risk for major depression. In addition, depression served as a strong predictor of intimate partner violence for a sample of 394 battered women who sought medical treatment at a family practice medical center (Campbell, Kub, Belknap, & Thomas, 1997).

According to Jones (1994), intimate partner violence served as the leading cause of injury to women in the United States. Conte (1998) and other members of the “You Have The Power..Know How To Use It” committee declared violence against women the number one public health issue facing women in the United States. Davis (1998) documented that more than one-half of married women (about 27 million women)

experienced physical abuse by their husbands during their marriage. A 1998 Commonwealth Fund survey revealed “nearly one-third of American women (31 percent) reported being physically and sexually abused by a husband or boyfriend at some point in their lives” (Family Violence Prevention Fund [FVPPF], 2000, p. 1).

Following an extensive study, Walker (1984) concluded physical abuse rarely occurred without the presence of psychological abuse. In addition, Walker stated that psychological abuse caused more harm to women than physical abuse. In agreement with Walker’s findings, Randall (1990) noted “in addition to the physical damage that women receive in violent relationships, they also experience severe attacks on their emotional health” (p. 940). Among the 22 to 35% of abused women who sought treatment for their injuries in 1990, 33% suffered from depression and 26% attempted suicide (Randall).

According to Lynch & Graham-Bermann (2000), abused women exhibited increased levels of depression and anxiety and decreased levels of self-esteem. A diminished sense of self that abused women felt following acts of physical and psychological abuse attributed to decreased levels of self-esteem. Due to feelings of inferiority and shame, abused women lost their sense of self. As a result, abused women felt helpless and powerless in decision-making.

In agreement with the documented findings regarding battered women’s diminished sense of self, Campbell et al. (1997) noted abused women often identified their sense of self through their relationships. As a result, abused women felt they should “maintain the relationship in order to maintain their sense of self” (p. 277). Researchers concluded that both battered and nonbattered women experiencing serious problems in

their relationships exhibited “approximately equal but significantly lower than norm mean levels of self-esteem” (p. 277). Therefore, researchers implied the potential loss of a relationship due to serious problems would endanger the woman’s sense of self, thus lowering her level of self-esteem (Campbell, et al).

Research conducted by Aguilar & Nightingale (1994) also showed abused women suffered from low self-esteem. However, the results were unclear if women with low self-esteem were more likely to be targeted for battering relationships or if the battering relationship caused the decrease in self-esteem levels. Regardless of the cause, the relationship between low self-esteem and abuse was evident. Research supporting this relationship identified that increased physical and psychological abuse resulted in lower levels of self-esteem and psychological well-being.

Swisher (1996) noted many social systems condoned, expected, and even encouraged the abuse of women. In addition, Siegel, Jacobs, & Foster (1989) noted that women believed their ethical and religious duty involved yielding to the needs and desires of their husbands. Blackman (1998) noted that less than 150 years ago, a husband could beat his wife with a stick provided the stick was no thicker than his thumb. In addition, the husband could beat his wife in any fashion or manner provided the beating “did not result in permanent injury or was malicious beyond all reasonable bounds” (p. 2). According to Roy (1977), a husband could beat his wife with a stick, pull her hair, choke her, spit in her face, or kick her about the floor and go unpunished. Many people considered wife abuse a “privilege” (p. 4) of the husband. Even though wife abuse became illegal in most states in the early 1900s, few people viewed the abuse as a “real

crime” (Blackman, p. 2). Women could not prosecute their abusive husbands in a criminal court until 1977 (Blackman; Roy, 1977).

The issue of violence against women received increased public attention over the past twenty years (Swisher, 1996). However, prior to the mid-1970s, few contributions existed in professional literature regarding the sociological and psychological issues surrounding violence against women (Hanson, Johnson, Taylor, Johnson, & Davis, 1992). The early days of wife abuse received no documentation under the law. The acceptance of abuse against women allowed such crimes to be covered up. Such issues were considered best dealt with by simply drawing the curtain and shutting out the public (Roy, 1977). Although people believed wife abuse incidents only affected a small number of women, research conducted in 1976 revealed wife abuse affected a much larger, diverse group of women (Davis, 1998). WIN News (1996) reported findings of domestic violence incidents in “all societies, in countries at all levels of development, and in all socioeconomic groups and cultures” (p. 52).

The early years of research focused on the terms “domestic violence,” (p. 1400) “wife abuse,” and “battered wives,” (p. 1401) when documenting information regarding abuse. However, those terms presented the assumption that abuse occurred only among married couples living in the same household and focused solely on the woman as the victim (Flitcraft, 1997). Consequently, such terms denied the recognition of male, single, separated, divorced, gay, or lesbian victims as being potential victims of abuse. As a result, the inclusion of the term, “partner” (p. 19) served as an editorial attempt to identify all individuals who could become potential victims of abuse regardless of gender or

sexual preference (Bender, 1996). The CDC (2000) described intimate partner violence as any act of physical, sexual, psychological, or emotional violence that was threatening toward an intimate partner. Therefore, CDC classified intimate partner violence as any form of violence occurring in any type of intimate relationship, regardless of the intimate partners being heterosexual or of the same sex.

Conte (1998) provided a list of the different types of domestic violence according to the redefinition. Types of domestic violence included: intimate partner violence, family violence, domestic or spouse abuse, child abuse, battering, and wife beating. According to WIN News (1996), domestic violence specifically included the following forms of abuse: physical battering, incest, rape, sexual abuse, and psychological exploitation. In addition, Aguilar & Nightingale (1994) noted intimate partner violence also came in the forms of emotional and/or controlling abuse and sexual and/or emotional abuse. Conte described specific types of psychological abuse as intimidation, threats, isolation, destructive criticism/verbal abuse, and coercion. According to Aguilar & Nightingale emotional aspects of psychological abuse such as humiliation, name-calling, and verbal harassment significantly impacted the mental health of the victim.

A comparison study of battered women ( $n = 48$ ) and nonbattered women ( $n = 48$ ) revealed the emotional/controlling form of abuse significantly lowered self-esteem levels of battered women. The findings from a 1998 study involving 108 physically abused women revealed they were three times more likely to experience anxiety, five times more likely to experience depression, and six times more likely to have a low level of self-esteem. In addition, women chronically abused by their intimate partner suffered from

bipolar disorder, panic disorder, post-traumatic stress disorder (PTSD), and/or suicidal ideation (Roberts, 1998). Lynch & Graham-Bermann (2000) presented research findings of the negative psychological outcomes of increased levels of depression and anxiety and decreased self-esteem levels that women endured as a result of being abused.

Based upon the evidence supporting the relationship between regular physical exercise and improved mental health, Brill & Cooper (1993) suggested a promotion of exercise and physical activity be implemented as a component of a comprehensive health-promotion or illness-prevention program. In agreement with Brill & Cooper, Donatelle & Davis (1996) encouraged participation in exercise programs based on the association between psychological benefits and physical activity.

In addition, the CDC (1999) suggested daily involvement in moderate levels of physical activity benefited women of all ages. Psychological benefits included “reduces symptoms of anxiety and depression” (p. 2). Additionally, improvements in mood and sense of well-being served as positive effects of participating in moderate physical activities. The National Crime Prevention Council (NCPC) stressed the importance of women increasing self-confidence levels regardless of the type of program in which they chose to participate.

### Statement of the Problem

An abundance of information existed on the psychological characteristics of battered women. In comparison, a wealth of information existed on the psychological consequences of participating in physical activity. However, the combination of

information on the psychological characteristics of battered women and their levels of physical activity offered limited research. The intent of this study was to compare the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women. An examination of the relationship of physical activity levels to self-esteem levels and depression levels among the three categories of women was also conducted.

### Significance of the Study

The purpose of the study was to compare the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women. An examination of the relationship of physical activity levels to self-esteem levels and depression levels among the three categories of women was also conducted. The ultimate goal of this study was to identify if any differences existed among the three categories of women regarding their levels of physical activity, self-esteem, and depression. In addition, the study investigated possible relationships among the three dependent variables and the three categories of women. Consequently, this information could be useful in the quest to assist battered women in the areas of physical and psychological health. Support to battered women could include the services provided by shelters, health care providers, social workers, psychologists, and society in general.

### Research Questions

For the purpose of this study, the following research questions were statistically investigated:

Q1: Is there a statistically significant difference in the physical activity levels among sheltered battered women, nonsheltered battered women, and nonbattered women?

Q2: Is there a statistically significant difference in the self-esteem levels among sheltered battered women, nonsheltered battered women, and nonbattered women?

Q3: Is there a statistically significant difference in the depression levels among sheltered battered women, nonsheltered battered women, and nonbattered women?

Q4: Is there a statistically significant relationship between the levels of physical activity and self-esteem among sheltered battered women, nonsheltered battered women, and nonbattered women?

Q5: Is there a statistically significant relationship between the levels of physical activity and depression among sheltered battered women, nonsheltered battered women, and nonbattered women?

### Limitations of the Study

The following conditions existed during this study:

1. Sheltered battered women lived in one of the five following battered women's shelters located in the Middle Tennessee area during the time of the data collection: Nashville YWCA Shelter, Ujima House of Nashville, Domestic Violence Shelter of

Madison, Bridges of Williamson County, and Domestic Violence Shelter of Murfreesboro.

2. Nonsheltered battered women attended weekly community support groups sponsored by one of the five battered women's shelters during the time of the data collection.

3. Nonbattered women were enrolled in either an introductory or upper-division psychology class at Middle Tennessee State University during the time of the data collection.

4. The shelter director or social worker at each site administered the surveys to sheltered battered women and nonsheltered battered women.

5. Between March 15, 2001 and March 29, 2001, two psychology professors from Middle Tennessee State University administered surveys to their introductory and upper division psychology classes that represented the nonbattered women category.

6. Limited professional research literature existed on the relationship of physical activity levels and battered women.

### Assumptions

The administration of this study recognized the following assumptions:

1. The Baecke Questionnaire of Habitual Physical Activity accurately evaluated the physical activity levels of all battered and nonbattered women involved in the study.

2. The Rosenberg Self-Esteem Scale accurately measured the self-esteem levels of all battered and nonbattered women involved in the study.

3. The Center for Epidemiologic Studies—Depression Scale accurately assessed the depression levels of all battered and nonbattered women involved in the study.

4. The battered and nonbattered women exhibited complete honesty when answering the demographic form and all three surveys.

5. The battered and nonbattered women received the information regarding the completion of the surveys in an exact manner.

### Definition of Terms

For the purpose of this study, the following definitions applied:

Battered Woman—“A woman, 18 years of age or over, who is or has been in an intimate relationship with a man who repeatedly subjects or subjected her to forceful physical and/or psychological abuse” (Walker, 1984, p. 203). Battered women included women living in a battered women’s shelter or attending a weekly community support group.

Battering—Using a pattern of behavior such as emotional abuse, physical abuse, economic abuse, intimidation, isolation, threats, or sexual abuse to establish power and control over another person (National Coalition Against Domestic Violence [NCADC], 2000).

Depression—A condition of feeling apathetic, hopeless, or withdrawn from others (Sizer, Whitney, & DeBruyne, 1997).

Domestic Violence—“ A pattern of assaultive and coercive behaviors, including physical, sexual, and psychological attacks as well as economic coercion, that adults use against their intimate partners” (FVPPF, 2000, p. 1).

Intimate Partner Violence—any act of physical, sexual, psychological or emotional violence that was threatening toward an intimate partner (CDC, 2000).

Nonbattered Women—Women not victimized by an intimate partner.

Nonsheltered Battered Women—Women victimized by an intimate partner.

Nonsheltered battered women did not reside in a battered women’s shelter, however, they attended weekly community support groups.

Physical Activity—The results of energy expenditure produced by the bodily movement of skeletal muscles (Caspersen, Powell, & Christenson, 1985). “A summation of the activities of daily living” (Osness, 1998, p.18).

Physical Battering—The use of physical attacks or aggressive behavior toward another person (NCADV, 2000).

Psychological Abuse—(Also referred to as emotional abuse). The type of abuse involving the victim being isolated, threatened, humiliated/degraded, verbally harassed, denied food and/or sleep, denied power, and/or administered drugs and/or alcohol by the abuser (Walker, 1984).

Self-Esteem—“A global self-reflexive attitude addressing how one feels about the self as it is viewed as an object of evaluation” (Lynch & Graham-Bermann, 2000, p. 179).

Sexual Abuse—The forcing of a victim to participate in unwanted sexual activity (NCADV, 2000).

Sheltered Battered Women—Women victimized by an intimate partner and who resided in a battered women's shelter.

### Justification of the Study

The results of a study conducted by Roberts (1998) showed 8.7 million women experienced abuse at the hands of their intimate partner during that year. According to Conte (1998), a woman becomes the victim of abuse every 15 seconds in the United States. Women represented 95% of the victims of domestic violence. Intimate partner violence accounted for more injuries to women between the ages of 15 and 44 than car accidents, muggings, and rapes combined. In addition to the frequency of violent acts against women, Conte noted the duration of the problem continued for an entire lifespan. In agreement with research presented by Conte, the CDC (2000) documented 25% of women participating in the National Violence Against Women (NVAW) survey reported being either raped or physically assaulted by an intimate partner at some time during their lives.

According to Randall (1990), women involved in violent relationships not only suffered from physical damage, but they also suffered severe attacks on their psychological health. The FVPF (2000) noted 56% of women exposed to partner violence also suffered from a psychiatric disorder. Twenty-nine percent of all women who attempted suicide in the past year were victims of intimate partner violence. Thirty-

seven percent of battered women were diagnosed with symptoms of depression. Forty-six percent of battered women exhibited symptoms of anxiety disorder and 45% demonstrated symptoms of post-traumatic stress disorder (PTSD).

Walker (1984) identified a decrease in physical activity levels for women following the first abusive incident. According to Walker, prior to the first abusive incident, 61% of women surveyed rated themselves “more active than passive” or “very active” (p. 33). Following the first abusive incident, only 22% of women rated themselves as “active” (p. 33). Brill & Cooper (1993) noted the importance of all types of physical exercise in the treatment of mental illness. According to Brill & Cooper, participating in regular physical exercise produced “tranquilizing psychological effects” that resulted in an improved sense of ability to cope with stress, anxiety and depression.

Even though vast amounts of literature exist on the psychological characteristics of battered women and the effects of physical activity on self-esteem and depression levels, limited research is available on the physical activity levels of battered women. Through analyzing the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women, the directors of battered women’s shelters and others who work directly with the battered population could enhance their knowledge of these variables and plan more effectively for services.

Battered women could gain additional benefits from the results of this study. Provided significant relationships are found among the three dependent variables and the three categories of women involved in the study, battered women may become

increasingly motivated to participate in physical activity. If no significant differences exist among the three categories of women on the three dependent variables, this study could at a minimum contribute to the currently limited area of professional literature on battered women and their physical activity levels.

## CHAPTER II

### Review of the Literature

The study compared the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women. An examination of the relationship of physical activity levels to self-esteem levels and depression levels among the three categories of women was also conducted. The review of literature included the following sections: (1) Effects of Physical Activity on Self-Esteem, (2) Effects of Physical and Psychological Abuse on Self-Esteem, (3) Effects of Physical Activity on Depression, (4) Effects of Physical and Psychological Abuse on Depression, (5) Prevalence of Intimate Partner Violence, (6) Review of Related Studies, and (7) Summary.

#### Effects of Physical Activity on Self-Esteem

“Self-esteem has traditionally been considered an indication of mental and social life adjustment and the mediator of behavior” (Hayes et al., 1999, p. 1). Bradley (1996) described self-esteem as the “value we place on our lives, skills, ability to function, cope, love and be loved” (p. 24). According to Morgan (1997), self-esteem represented the most indicative variable of life adjustment. Low self-esteem is repeatedly associated with psychopathology and depression. In addition, “individuals with low self-esteem tend to adopt an external control orientation even to the extent of believing themselves to

be at the mercy of social and environmental influences” (p. 128). Conversely, “high self-esteem permits people to function well in society, and also provides them with greater adaptability and control over societal roles” (p. 128).

A review of literature relating exercise to self-esteem showed that participating in exercise programs significantly increased self-esteem scores. Study participants initially demonstrating lower levels of self-esteem showed the greatest increases (Baldwin & Coureya, 1997). A study of 32 clinically depressed women showed they exhibited significant improvements to self-esteem following exercise (Morgan, 1997). Due to the assertion of the relationship between depression and low self-esteem, researchers classified the sample as initially having a lower level of self-esteem. Therefore, Morgan conducted a meta-analysis of 16 studies that tested the correlation between participation in exercise and self-esteem levels. Morgan found that “exercise programs are associated with significant increases in self-esteem scores of participants” (p. 129). Greenburg & Oglesby (1997) supported the previous findings regarding the potential benefit to self-esteem from participating in physical activity. Greenburg & Oglesby noted participating in physical activity particularly benefited the emotional well-being of women.

Caruso & Gill (1992) concurred with the findings that participating in physical activity enhanced levels of self-confidence, mood, and self-esteem. Brill & Cooper (1993) found individuals participating in regular physical activity exhibited improved levels of self-sufficiency, maturity, resourcefulness, and self-confidence. Plummer & Koh (1987) documented the findings from research studies comparing the physiological and psychological aspects of aerobic fitness. Researchers concluded significant

differences between control groups and aerobics groups, thus suggesting self-concept improved when individuals participated in aerobics.

Baldwin & Coureya (1997) noted improvement in self-esteem levels and quality of life for breast cancer survivors following exercise intervention. Based on current research findings, women who exercised at higher intensities and longer durations demonstrated elevated levels of self-esteem as compared to women who exercised less frequently at strenuous levels (Baldwin & Coureya).

Isreal (1998) examined the effectiveness of the “Outward Bound Victims of Violence Recovery Program” in altering the locus of control, self-esteem levels, and problem-solving appraisal abilities of battered women. The Outward Bound Victims of Violence Recovery Program, a therapeutic program designed for battered women, provided battered women the opportunity to participate in exercise activities that offered a personal sense of mastery and a distraction from daily stressors. Individuals completing the program showed increased levels of self-esteem and problem-solving appraisal. In addition, the battered women received extrinsic or intrinsic reinforcement such as awards, opportunity to socialize, and physical changes.

The implementation of the program occurred during two weekend sessions. Participants during the first weekend recovery program included eight women selected from the “Gateway Battered Women’s Shelter.” The second weekend of the recovery program included the remaining seven subjects from a private psychotherapist and the Gateway Shelter. The data revealed a significant effect of the Violence Recovery Program on the battered woman’s level of self-esteem, problem-solving appraisal, and

possibility of being controlled by other people. Data showed no significant effect on the battered women's sense of internal control (Isreal, 1998).

### Effects of Physical and Psychological Abuse on Self-Esteem

Warshaw & Ganley (1995) and Cantrell (1997) described physical abuse as any of the following types of behaviors: scratching, biting, grabbing, punching, shoving, shaking, pushing, restraining, twisting, slapping, choking, burning, pinching, kicking, or using weapons against the victim. Extreme forms of physical violence resembled types of torture techniques such as "sleep deprivation, burns, electric shock, bondage, semi-starvation, choking, near drowning, exposure, mutilation, and rape" (Jones, 1994, p. 93).

Warshaw & Ganley (1995) described psychological abuse as any of the following types of behaviors: (a) threats of violence and physical harm, (b) acts of intimidation against property or pets, (c) emotional abuse, (d) isolation, (e) use of children, and (f) economic control. Characteristics of emotional abuse included the victim being subjected to verbal attacks, humiliation, or controlling behaviors. Isolation for the victim involved the perpetrator's sense of controlling time, activities, and contact with others. In an attempt to maintain control over the victim, the perpetrator threatened to take away the children and denied the victim access to family resources. In order to supplement the information noted by Warshaw & Ganley, Landes, Squyres, & Quiram (1997) provided a list from the NCADV that classified emotional and verbal/psychological abusive behaviors exhibited by the perpetrator:

- ignored the victim's feelings,

- ridiculed or insulted women as a group,
- ridiculed or insulted the victim's most valued beliefs, the victim's religion, race, heritage, or class,
- withheld approval, appreciation, or affection as punishment,
- continually verbally criticized the victim,
- humiliated the victim in private or public,
- refused to socialize with the victim,
- kept the victim from working, controlled the victim's money, made all decisions,
- took car keys or money away from the victim,
- regularly threatened to leave or told the victim to leave,
- threatened to kidnap the children if the victim left,
- abused, tortured, or killed pets to hurt the victim,
- harassed the victim about imagined affairs of the victim,
- manipulated the victim with lies and contradictions,
- destroyed furniture, punched holes in walls, broke appliances, and
- wielded a gun in a threatening way.

Cantrell (1997) associated the effects of physical abuse to the lowered self-esteem level of the victim. According to Cantrell, as the abuse increased in frequency and intensity, the victim began to lose all sense of identify, which resulted in feelings of guilt and hopelessness. As the self-esteem level of the victim decreased, the feelings of fear and helplessness increased. Warshaw & Ganley (1995) and Goolkasian (1986) compared

the behaviors and effects of psychological abuse to the attacks used against prisoners of war or hostages as they are done for the same purpose of gaining and maintaining control and power over the victim.

### Effects of Physical Activity on Depression

Bradley (1996), Brill & Cooper (1993), Martinsen (1990), and Morgan & Goldston (1987) viewed depression as the most prevalent mental illness in the United States. According to Brill & Cooper, 25 million Americans suffer from severe depression at some time in their lives. Researchers revealed participation in regular exercise reduced levels of stress, anxiety, depression, and hostility and enhanced coping mechanisms. Greenberg & Oglesby (1997) concurred with Brill & Cooper stating as much as 25 percent of the population suffers from mild to moderate anxiety and depressive disorders. Greenberg & Oglesby added, "such mental health states have been shown to be particularly responsive to exercise and/or physical activity that can decrease many of the symptoms associated with a number of psychiatric conditions" (p. 2).

Through a meta-analysis conducted in the United States, Germany, and Japan, Osness (1998) identified a direct relationship between an individual's level of physical activity and the incidence of depression. Results showed those individuals engaging in higher levels of physical activity demonstrated a lower risk for developing symptoms of depression. Brill & Cooper (1993) attributed the individual's reduction in depression level to the initiation and maintenance of a regular program of exercise. Brill & Cooper documented information from the NIMH stating most people experienced improved

mental health and well-being from the regular participation in physical fitness and physical activity.

Brill & Cooper (1993) and Greenberg & Oglesby (1997) noted the results of two different studies conducted by Greist and his colleagues relating exercise as a treatment option for depression. Greist and his colleagues recognized participating in a regular exercise program produced as effective results on depression levels as psychotherapy, meditation-relaxation, and group psychotherapy. In addition, Greist's studies showed that individuals who continued to participate in exercise maintained their improvements. Thus, Brill & Cooper suggested, "physical exercise of all types is a natural, inexpensive, and effective means of coping with these problems and should be considered a viable option for treatment and for reducing the cost of health care" (p. 45).

Bower (1986) also noted participation in regular exercise produced effective benefits for both the mind and body. Findings from a report from the University of Kansas showed physically fit subjects reported fewer symptoms of depression when confronted with life changing events such as divorce, death of a loved one, and switching jobs during the past year than nonphysically fit subjects. Controlled experiments involving women and exercise revealed improved scores on levels of depression, anxiety, and self-concept (Palmer, 1995).

While the positive impacts of exercise on psychological well-being received extensive documentation, Greenberg & Oglesby (1997) noted the lack of absolute theory explaining the underlying mechanisms causing the effects. However, numerous

biological and chemical hypotheses exist that offer explanations for the positive effects of exercise on psychological health.

Researchers found individuals suffering from clinical depression often exhibited lower levels of naturally occurring brain neurotransmitters, most notably norepinephrine. Researchers also found participation in physical exercise caused an increase in the production of important brain transmitters, specifically norepinephrine. Physiologically, the brain received an increased amount of blood that triggered the release of critical brain transmitters such as serotonin, epinephrine, norepinephrine, and dopamine, thus resulting in an improved mood and enhanced alertness (Seraganian, 1993; Bradley, 1996).

Brill & Cooper (1993) suggested the changes occurred as a result of endorphins being released into the bloodstream. Once the endorphins entered into the bloodstream, euphoria increased and lasted for several hours. Feelings of euphoria included a sense of improved coping ability with stress and a reduction in anxiety and depression. "Regular physical activity stimulates the functioning of the central nervous system that is associated with neuropsychological function. This stimulation increases the transport and utilization of oxygen in the brain and increases cerebral metabolic activity of such neurotransmitters as acetylcholine, norepinephrine, dopamine, and serotonin"(p. 44). Therefore, the regulation of the norepinephrine release resulted in decreased depression levels. Consequently, Bradley (1996) viewed exercise as an excellent adjunct in the treatment of depression.

Based on the positive relationship between exercise and mental health, the promotion of physical fitness served as a viable option in the treatment of depression

(Grant, 1987). An article published in a September 2000 issue of the Harvard Mental Health Letter supported the therapeutic effects of exercise. Researchers concluded that exercise served as an effective and inexpensive treatment for those patients who suffered from mild to moderate depression.

According to Craft & Landers (1998), participating in exercise effectively treated depression as well as other more traditional forms of treatment. The results of one-year follow-ups found fewer symptoms of depression among those subjects continuing to exercise as compared to subjects no longer exercising. A review focusing on clinically anxious and depressed individuals concluded: (a) clinically depressed individuals exhibited lower levels of fitness, (b) exercise demonstrated more effective results than no treatment, (c) exercise was as effective as other traditional forms of treatment, (d) exercise proved as an important adjunct to more traditional therapies such as group and individual psychotherapy and medication, and (e) psychological benefits occurred regardless of increases in aerobic fitness.

Many people believed that physical activity needed to be of a strenuous nature in order to be productive. In addition, aerobic activity served as the most effective type of physical activity (Craft & Landers, 1998). Furthermore, Bower (1986) noted the results of studies that found an association between aerobic training and elevated moods of mildly depressed patients.

In contrast, the CDC (1999) noted health benefits occur without the incorporation of strenuous activity. Morgan (1997) added psychological benefits occurred through participation in physical activity regardless of the intensity level. Morgan documented a

1993 study, conducted by Stewart, King, & Haskell, which revealed an association between physical activity and psychological benefits. In addition, the study showed no relationship between the intensity or format of the exercise and the psychological gains. In agreement with the previous findings, Greenberg & Oglesby (1997) noted greater enhancement to psychological health when participation in exercise served as the focus, rather than attaining a specific fitness level.

An article published in the Journal of Physical Education, Recreation, and Dance showed individuals participating in moderate, regular exercise activities, as opposed to intense, lengthy bouts of exercise, experienced greater feelings of well-being and an enhanced self-image (Osness, 1998). Martinsen (1990) and Greenberg & Oglesby (1997) noted antidepressant effects occurred through participating in anaerobic activities. Therefore, attainment of aerobic fitness proved unnecessary. Morgan (1997) viewed aerobic and anaerobic exercises as equally effective in the treatment of mild to moderate forms of unipolar depression.

According to Palmer (1995), participating in “mild aerobic exercise such as walking or dancing” (p. 892) proved more psychologically beneficial than incorporating more strenuous aerobic activities such as running or racquetball. In addition, the effects of walking programs revealed significant declines in the depression levels of alcoholics, neurotics, and depressed elderly. Palmer identified significant improvements to general well-being of non-clinical, premenopausal women following a 15-week walking program. Morgan (1997) documented the results of an 8-week aerobic versus anaerobic

study of depressed women conducted by Ossip-Klein et al. The authors concluded “significant (and comparable) gains” (p. 130) to psychological change in both groups.

### Effects of Physical and Psychological Abuse on Depression

Depression represented a primary mental health response of battered women (Campbell et al. 1997; Walker, 1984). Campbell et al. identified depression as a “reaction to the abuse rather than the abuse being seen as a consequence of depression” (p. 273). A review of related literature revealed intimate partner violence as a strong predictor of depression in women. The Center for Medical Consumers (1990) concurred with the previous findings that battered women exhibited significantly higher levels of depression.

According to the Center for Medical Consumers (1990) and Greenberg & Oglesby (1997), twice as many women than men suffered from depression. The following symptoms represented the specific criteria for diagnosing depression:

- significant change in appetite or weight,
- depressed mood,
- change in sleeping patterns (insomnia or hypersomnia),
- fatigue or loss of energy,
- sexual dysfunction,
- diminished interest or pleasure in most activities,
- diminished ability to think, concentrate, or make decisions,

- impairment in function associated with feelings of helplessness, hopelessness, and worthlessness, and
- recurrent thoughts of death or suicide.

The results of a 1998 study involving 108 physically abused women showed these women were three times more likely to experience anxiety, five times more likely to experience depression, and six times more likely to have a low level of self-esteem than men. In addition, women chronically abused by their intimate partner suffered from increased incidents of bipolar disorder, panic disorder, post-traumatic stress disorder (PTSD), and/or suicidal ideation (Roberts, 1998).

According to a national survey presented by Crowell & Burgess (1996), abused women experienced an increase in psychological distress as the frequency of abuse increased. Types of psychological distress included shock, denial, disbelief, fear, confusion, and withdrawal. In addition, abused women became more dependent on the batterer and showed increased difficulty undertaking long-range planning or decision-making.

Results from a study of 164 moderately to severely depressed women showed battered women at a significantly higher risk for developing major depression (Campbell et. al., 1997). The National Institute of Mental Health Epidemiological Catchment Area study served as a comparison for the results of the study. Additional results from the same study revealed battered women exhibited a higher prevalence for major depression (63 percent) than for post-traumatic stress disorder (40 percent).

Campbell et al. (1997) also documented a correlational study of physical abuse and depression. Participants in the study included a voluntary sample of battered women. The outcome of the study revealed a strong association between physical abuse and depression. A national random survey comparing women who experienced severe violence, minor violence, and no violence in their relationships revealed higher depression levels among women who experienced severe physical violence. Researchers conducting a study involving 33 battered women discovered “as the number, form, and subsequent consequences of physically aggressive acts increased, depressive symptoms increased” (Campbell et al., p. 273).

Two longitudinal studies conducted by Campbell et al. (1997) supported the correlation between physical abuse and depressive symptomology. The growth curve analysis of depression involved a sample of 51 battered women. The length of the study spanned approximately two and one-half years. During the time of the follow-up, 34 of the 51 women no longer involved in abusive relationships exhibited lower mean scores on the Beck Depression Inventory. In addition, 31 (91 percent) of the 34 women showed clear patterns of decreased depression. Seven of the women demonstrated striking patterns of decreased depression, from scores within the moderately severe to severe range to very low scores within the normal range.

A sample of 146 battered women illustrated lower depression levels following exercise. The Center for Epidemiological Studies—Depression Scale measured the prevalence of severe depression among the participants. Researchers identified women continually abused by an intimate partner at ten-weeks and six-months post-shelter

showed significantly higher depression levels than women whose lives remained free of violence (Campbell et al., 1997).

### Prevalence of Intimate Partner Violence

Swisher (1996) noted FBI statistics, which showed “women battering was one of the most frequently occurring crimes in the nation” (p. 12). The American Bar Association [ABA] (1998) documented the results of a 1995 Bureau of Justice Statistics Special Report noting a conservative estimate of 1 million women suffered nonfatal violence each year at the hands of an intimate partner. Even though most experts on intimate partner violence agreed that the battering of women had reached epidemic proportions, researchers found the number of women actually reporting the abuse occurred less frequently.

The results of a study documented by Swisher (1996) showed only “one out of every 207 incidents of wife abuse is ever reported to law enforcement” (p. 11). Swisher also noted the findings of Lenore Walker, a Denver psychologist who performed extensive research in the area of domestic violence, which revealed, “less than 10 percent ever reported serious violence to the police” (p. 11). Walker attributed the women’s underreporting of the abuse to the following reasons: (a) victim denial, (b) protection of the batterer, (c) disavowal techniques to keep it within the family, (d) silent desire to be abused, (e) fear of alternatives such as continued abuse or loss of support, and (f) shame.

Jones (1994) stated “untold numbers of women suffer permanent injuries—brain damage, blindness, deafness, speech loss through laryngeal damage, disfigurement and

mutilation, damage to or loss of internal organs, paralysis, sterility, and so on” (p. 87). The battering of pregnant women contributed to countless miscarriages, birth defects, and abnormalities (National Organization for Women [NOW], 1994). According to Swisher (1996), battered women accounted for more than 100,000 hospitalizations each year. The FVPP (2000) reported, “37% of all women who sought care in hospital emergency rooms for violence-related injuries were injured by a current or former spouse, boyfriend, or girlfriend” (p. 1). The National Center for Disease Control identified a direct link between battered women and the spread of HIV and AIDS. The association of battered women and HIV resulted from countless numbers of women being forced to have unprotected sex with their HIV positive batterer with the intent to deliberately prevent the victim from having sex with other individuals (Swisher, 1996).

While most victims of violent crimes involved men, most victims of intimate partner violence involved women (Bachman & Saltzman, 1995; Crowell & Burgess, 1996). The NOW (1994) supported the previous claim with the statistic that “women were 10 times more likely than men to be victimized by an intimate partner” (p. 1). According to Jones (1994) and NOW, at least four women died violently each day at the hands of an intimate partner.

Crowell & Burgess (1996) reported the results of an FBI investigation that identified approximately 1500 murders of women by their husbands each year. The results of a 1993 survey found husbands or boyfriends killed 29% of female homicide victims. In comparison, wives, ex-wives, or girlfriends killed only three percent of male homicide victims. Consistent with previous findings, Crowell & Burgess (1996), FVPP

(2000) and Sampsele (1992) reported that abused women were significantly more likely than abused men to be killed by their abuser. The ABA (1998) presented statistics showing “88% of victims of domestic violence fatalities had a documented history of physical abuse” (p. 10). In addition, women were the homicide victims in 70% of the cases. “More than 50% of all women will experience some form of violence from their spouses during marriage. More than one-third (approximately 18 million women) is battered repeatedly every year” (Landes et al., 1997, p. 11).

### Review of Related Studies

Brill & Cooper (1993) credited a growing number of experimental studies and the existence of several plausible theoretical explanations for the causal relationship between regular physical activity and the benefits to mental health. The results of four independent national surveys revealed participating in physical activity helped to maintain and enhance general and psychological well-being among all age and gender subgroups. The relationship proved more significant in women than men. A study examining the relationship between the physical activity levels and self-esteem levels of 64 breast cancer survivors revealed a significant relationship between exercise participation and global self-esteem (Baldwin & Coureya, 1997).

Palmer (1995) examined the effects of an eight-week walking program on self-esteem, depression, and attributional style of 27 nonexercising, premenopausal female volunteers. The ages of the participants ranged from 29 to 50. Participants assigned to a walking group walked as a group for 20 minutes each day for the first two weeks. Each

week thereafter, the walking sessions increased by five minutes. Participants pretested and posttested using the Attributional Style Questionnaire, the Rosenberg Self-Esteem Scale, and the Center for Epidemiological Studies—Depression Scale. A one-way repeated measures multivariate analysis of variance was used to analyze the data. The walking versus nonwalking treatment condition served as the independent variable. The remaining pretest and posttest scores served as the subject factors. The results of the study indicated the walking program provided the participants with both physical and psychological benefits. Data showed significant differences for self-esteem with an  $F(1, 25) = 13.12, p < .001$ ; diastolic blood pressure with an  $F(1, 2) = 7.10, p < .05$ ; and the timed mile walk with an  $F(1, 25) = 41.30, p < .001$ . Matched pair t-tests analyzed three significant interactions among the within group pretest scores with posttest scores. T-tests showed significant improvements in the walking group's timed mile walk ( $t_{15} = 9.71; p < .001$ ); diastolic blood pressure ( $t_{15} = 4.67, p < .001$ ); and self-esteem ( $t_{15} = 2.44, p < .05$ ). No significant changes occurred in the areas of depression or attributional style (Palmer, 1995).

Researchers investigated the effects of exercise on depression levels using 43 depressed women. Women assigned to an exercise group participated in rhythmical aerobic exercise for one hour twice per week. In addition, the exercise group participated in physical activity outside of class for a total of 30 minutes per week. Women assigned to a placebo group participated in a progressive muscle relaxation technique. Instructions included practicing progressive muscle relaxation for 20 minutes per day for four days per week and preceded each session with at least a five-minute walk. Investigators told

women assigned to a no treatment group that, due to the unavailability of openings in the treatment conditions, their treatment would be temporarily postponed. Results showed greater reductions in depression levels for women in the exercise group than women in either the placebo or no treatment groups. Ultimately, the experiment provided sufficient additional evidence that aerobic exercise reduced depression levels. Thus, the experiment provided additional support for aerobic exercise as an effective treatment for depression (Seraganian, 1993).

Martinsen (1990) documented the results of a 1984 study conducted by McCann and Holmes. The researchers compared the elevated depression scores of 43 depressed women. Depressed women assigned to an aerobics class met for one hour twice each week. Depressed women assigned to a relaxation-training group met for 20 minutes four times per week. Investigators told depressed women, assigned to a waiting list control group, that all groups were full and thus, those women received no intervention. Results of the study revealed decreased depression levels for all subjects after 12 weeks. However, more significant reductions occurred in the aerobic exercise group.

An additional 12-week study examined the effects of aerobic exercise on depression levels of 74 mildly to moderately depressed participants. Patients randomly assigned to an aerobic exercise group ran or walked for one hour twice each week. Patients randomly assigned to a meditation-relaxation group met for two hours once a week. Patients randomly assigned to a psychotherapy group met for two hours each week. Results of the study showed significant decreases in depression levels for all three

treatment groups at the end of the 12-week period. A nine-month follow-up revealed a more significant outcome for the exercise and meditation groups (Martinsen, 1990).

Morgan & Goldston (1987) noted the results of a study that compared the effects of counseling therapy to running therapy on levels of depression. Participants included 18 college students from a "large university" (p. 123) who sought help for depression at the mental health clinic. "A two-way ANOVA with repeated measures contrasting pretest and posttest scores for both groups showed a significant interaction effect  $F(1, 16) = 9.32, p < .01$ " (pp. 124-125). Tukey Wholly Significant Difference method illustrated the exact nature of the interaction effect. While no significant differences of simple effects existed between the groups on the pretest, the posttest revealed significant differences. The running and counseling groups identified within group differences on the pre and posttest measures, thus implying that running served as an effective adjunct to counseling therapy in the treatment of depression.

An additional study involving 49 depressed volunteers probed the separate and combined effects of counseling therapy and aerobic exercise in the treatment of mild and moderate depression. The 13 males and 36 females ranged in ages from 19 to 62 years. The participants received random assignment to one of the three following treatment groups: a running group, a counseling group, or a combination group consisting of running and counseling. After being divided into small groups, the running group participated in a supervised and structured running program for 20 minutes three times per week. Participants assigned to the counseling group met individually with a counselor one hour each week for cognitive based counseling. Participants in the

combination group received counseling as well as participated in a running program. Results of the 10-week study showed significant but not differential improvements in self-reports of depression, anxiety, and other related mood states. While both the counseling and running groups exhibited equal effects, the combination of both treatments revealed no more benefit than either treatment applied separately (Morgan & Goldston, 1987).

The results of a survey of 1,750 primary-care physicians throughout the United States revealed 85% regularly prescribed a walking exercise for the management of anxiety, depression, stress, and hostility (Brill & Cooper, 1993). According to an article published in Psychology Today, exercise served as a viable treatment option for those individuals suffering from mild to moderate levels of depression. In addition, researchers found walking or running three times a week for 20 to 60 minutes significantly lowered depression levels after five weeks for those individuals suffering from clinical depression (Sussex Publishers, 1999).

Results from a 16-week study regarding older adults and depression supported the findings of the effective treatment of aerobic exercise on levels of depression (Apgar, 2000). Plummer & Koh (1987) concurred with the findings of the beneficial aspects of aerobic activity on psychological well-being. A meta-analysis of 120 studies probing the association of physical fitness and mental health concluded that participation in physical activity promoted the ability to cope with stressful situations.

According to the results of literature reviews published by Osness (1998), not all of the literature supported the inverse relationship between physical activity and

depression. Some researchers found “little evidence that exercise and physical activity related inversely to depression and that changes in activity patterns neither affect the risk nor change the symptoms of depression” (p. 17). An article published in the August 1993 issue of Science News revealed, “regular exercise and physical fitness do not boost one’s mood or otherwise pump up the psyche” (p. 120).

### Summary

Hayes et al. (1999) considered self-esteem an indication of mental and social adjustment. Bradley (1996) described self-esteem as the “value we place on our lives, skills, and abilities” (p. 24). Sizer et al. (1997) classified depression as a condition of feeling apathetic, hopeless, or withdrawn from others. Physical activity included the use of energy expenditure produced by the bodily movement of skeletal muscles (Caspersen et al., 1985).

Morgan (1997) noted an established link among low levels of self-esteem, psychopathology, and depression. Conversely, individuals with higher levels of self-esteem functioned better in society and adapted more effectively to social roles. A review of literature investigating the relationship of exercise to self-esteem showed participation in exercise programs resulted in significant increases to the participant’s self-esteem scores (Baldwin & Coureya, 1997). In addition, Caruso & Gill (1992) found participation in physical activity enhanced levels of self-confidence and psychological well-being.

While researchers viewed depression as the most prevalent mental illness in the United States (Brill & Cooper, 1993; Martinsen, 1990; Morgan & Goldston, 1987), Osness (1998) identified a direct relationship between an individual's level of physical activity and the incidence of depression. Brill & Cooper revealed participation in regular exercise reduced levels of stress, anxiety, depression, and hostility. Following a pioneer study in 1979, Greist and his colleagues suggested the effective use of exercise as a treatment option for depression (Brill & Cooper).

Although many individuals believed physical activity had to be of a strenuous nature in order to be effective. Morgan (1997) noted participation in physical activity, regardless of the intensity level, produced psychological benefits. Martinsen (1990) added antidepressant effects occurred during participation in anaerobic activities. Therefore, according to Martinsen, attainment of aerobic fitness proved unnecessary.

Numerous literary and statistical analyses documented the prevalence of intimate partner violence. According to FBI statistics, "woman battering was one of the most frequently occurring crimes in the nation" (Swisher, 1996, p. 12). At least four women died violently each day at the hands of an intimate partner (Jones, 1994; [NOW], 1994). "More than 50% of all women will experience some form of violence from their spouses during marriage. More than one-third (approximately 18 million women) is battered repeatedly each year" (Landes et al., 1997, p. 11).

According to Cantrell (1997), physical and psychological abuse resulted in a decrease in the victim's self-esteem level. As the self-esteem level of the victim decreased, feelings of fear and helplessness increased (Cantrell). Campbell et al. (1997)

identified depression as a reaction to psychological and physical abuse. A review of literature revealed intimate partner violence as a strong predictor of depression in women. The Center for Medical Consumers (1990) supported previous findings regarding battered women being at a significantly higher risk for developing depression.

Brill & Cooper (1993) credited a growing number of experimental studies and the existence of several plausible theoretical explanations for the causal relationship between regular physical activity and the benefits to mental health. While the majority of literature indicated a positive relationship among the levels of physical activity, self-esteem, and depression, some researchers suggested only a limited amount of research supported the inverse relationship between physical activity and depression.

## Chapter III

### Method

This chapter includes the following: (1) Description of the Participants, (2) Procedures for Data Collection, (3) Instrumentation, and (4) Analysis of Data.

#### Description of the Participants

The participants representing the “sheltered battered” population were 50 battered women that resided in one of the following five battered women’s shelters in the Middle Tennessee area: (1) Bridges of Williamson County, (2) Domestic Violence Shelter of Rutherford County, (3) Madison Domestic Violence Shelter, (4) Ujima House of Nashville, and the (5) Young Women’s Christian Association (YWCA) of Nashville.

Participants representing the “nonsheltered battered” population were 50 battered women who attended weekly community support groups sponsored by each of the five shelters. Participants representing the “nonbattered” population were 50 female students enrolled in either an introductory or upper division psychology class at Middle Tennessee State University. The participants in each of the three categories volunteered for this study.

### Procedures for Data Collection

Shelter directors or social workers explained the procedures used throughout the study to the sheltered battered and nonsheltered battered categories of women. Two psychology professors at Middle Tennessee State University delivered the explanations of procedures to the nonbattered category. All survey administrators received a brief training session and followed a structured protocol (Appendix A) prior to the collection of data.

The same shelter directors, social workers, and psychology professors administered the demographic form (Appendix B). The following information illustrates the analyses of the demographic data on the sample as a whole ( $N = 150$ ). Socioeconomic variables included self-identified age, race, average combined household income, highest educational level, present employment status, time presently spent living in a battered women's shelter, time presently spent attending community support group meetings, and the number of years lived with abuser. In addition to the demographic form, the participants completed the following surveys: the Baecke Questionnaire of Habitual Physical Activity (Appendix C), the Rosenberg Self-Esteem Scale (Appendix D), and the Center for Epidemiologic Studies—Depression Scale (Appendix E).

Prior to the collection of data, participants who chose to be in the study signed a consent form (Appendix F). Testing of the sheltered battered sample took place at each shelter during either the entrance or exit interview or during the "in house" support group meetings. Testing of the nonsheltered battered sample occurred during weekly

community support group meetings. Testing of the college students occurred during regularly scheduled class sessions.

A pilot study preceded this investigation. The pilot study served as an opportunity to evaluate the research protocol and address any detectable problems prior to the implementation of the actual study. In addition, the pilot study verified the reliability of the instrumentation for this study.

The pilot study included subjects from each of the targeted categories: sheltered battered women ( $n = 10$ ), nonsheltered battered women ( $n = 10$ ), and nonbattered women ( $n = 10$ ). The collection of data occurred at all participating battered women's shelters, community support group meetings, and psychology classes at Middle Tennessee State University.

All statistical analyses performed for this study incorporated the use of the Statistical Package for the Social Sciences (SPSS 10.1 for Windows). All tests of the research questions incorporated  $p < .05$  alpha levels. An analysis of the data from the pilot study revealed reliability coefficients of .87 for the Baecke Questionnaire of Habitual Physical Activity, .87 for the Rosenberg Self-Esteem Scale, and .93 for the Center for Epidemiologic Studies-- Depression Scale. The results of the pilot study warranted further investigation of this study.

## Instrumentation

### Baecke Questionnaire of Habitual Physical Activity

The Baecke Questionnaire of Habitual Physical Activity was used to measure physical activity levels of all participants in the study. Baecke, Burema, and Frijters developed the 16-item, self-administered questionnaire in 1982. The Baecke Questionnaire assessed physical activity levels in three conceptually distinct categories: (1) work activity, (2) sport during leisure time, and (3) physical activity during leisure time, excluding sport. The “work activity” and “physical activity during leisure time, excluding sport” categories consisted of questions scored on a 5-point Likert scale. The Likert scale ranged from “never” (1 point) to “very often” (5 points). A summation of the scores gave separate indices. However, the “sport during leisure time” category was assessed by a combination of the intensity of the sport participation, the duration of time per week playing that sport, and the number of months per year in which the sport was played regularly. A total score resulted from summing the three separate indices (Lamb & Brodie, 1990).

In an attempt to identify reliability, 139 Dutch males and 167 Dutch females ranging in ages from 20 to 32 years responded to the Baecke questionnaire. The Pearson product-moment correlation was .88 (Baecke, Burema, & Frijters, 1982; Lamb & Brodie, 1990).

### Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale, a 10-item, self-report questionnaire was used to assess self-esteem levels of each participant. The Likert scale design of the Rosenberg Self-Esteem Scale consisted of items answered on a four-point scale ranging from strongly agree (4 points) to strongly disagree (1 point). Higher numbers of all summed items reflected higher levels of self-esteem. Forty points represented the highest possible score and ten points reflected the lowest possible score. The scoring for items one, three, four, seven, and ten had to be reversed in order for the scoring to improve from less to more self-esteem (Rosenberg, 1965).

Reliability of the Rosenberg Self-Esteem Scale was .92. Rosenberg originally developed the scale to assess adolescents' global feelings of self-worth or self-acceptance. The original sample included 5,024 high school juniors and seniors from 10 randomly selected New York high schools. Rosenberg's scale continues to be the "standard" against which other measures of self-esteem are compared (Rosenberg, 1965).

### Center for Epidemiologic Studies—Depression Scale

The Center for Epidemiologic Studies--Depression Scale was used to measure current depression levels of each participant. The Center for Epidemiologic Studies initially developed the depression scale as a "state" measure of depressive symptomology for research applications in epidemiologic studies within the general population (Radloff, 1977).

The 20-item, self-administered questionnaire assessed the frequency of symptoms associated with depression within the past week. Each item required the respondent to indicate the frequency or duration that she experienced a specific feature during the preceding week by circling a number between 0 and 3. The anchors assigned to those values included: 0 indicated a feature occurred “rarely or none of the time” (less than 1 day); 1 indicated “some or a little of the time” (1-2 days); 2 indicated “occasionally or a moderate amount of time” (3-4 days); and 3 indicated “most or all of the time” (5-7 days). The possible range of scores was 0-60, with higher scores representing greater levels of depression (Devins & Orme, 1985).

Reliability information included sample coefficients alpha = .85 ( $N = 2514$ ), .85 ( $N = 1060$ ), .84 ( $N = 1422$ ), and .90 ( $N = 1070$  psychiatric patients) for samples 1, 2, 3, and 4, respectively. Sample split-half reliability coefficients = .77 ( $N = 2514$ ), .76 ( $N = 1060$ ), .77 ( $N = 1422$ ), and .85 ( $N = 1070$  psychiatric patients) for samples 1, 2, 3, and 4, respectively. Sample Spearman-Brown reliability coefficients = .87 ( $N = 2514$ ), .86 ( $N = 1060$ ), .87 ( $N = 1422$ ), and .92 ( $N = 1070$  psychiatric patients) for samples 1, 2, 3, and 4, respectively (Radloff, 1977).

### Analysis of Data

Physical activity, self-esteem, and depression levels were compared among sheltered battered women, nonsheltered battered women, and nonbattered women. An examination of the relationship of physical activity levels to self-esteem levels and depression levels among the three categories of women was also conducted. A

MANOVA was utilized to assess whether overall differences existed among the three categories of women (sheltered battered, nonsheltered battered, nonbattered) on the three dependent variables (physical activity, self-esteem, depression). Further analysis involved the use of univariate analysis of variance (ANOVA) and Tukey HSD multiple comparison tests to identify on which pair of categories and on which dependent variables the differences existed. Pearson product-moment correlations examined possible relationships between the dependent variables. All tests of the research questions incorporated  $p < .05$  alpha levels.

The statistical analyses performed for this study incorporated the use of the Statistical Package for the Social Sciences (SPSS 10.1 for Windows). Descriptive data for this study included: (1) numbers, (2) percentages, (3) means, and (4) standard deviations.

## CHAPTER IV

### Results

The purpose of the study was to compare the levels of physical activity, self-esteem, and depression among sheltered battered women, nonsheltered battered women, and nonbattered women. The relationship of physical activity levels to self-esteem levels and depression levels among the three categories of women was also examined. The Baecke Questionnaire of Habitual Physical Activity was used to measure the physical activity levels of the participants. The Rosenberg Self-Esteem Scale was used to measure the self-esteem levels of the participants. The Center for Epidemiologic Studies--Depression Scale was used to measure the depression levels of the participants.

This chapter includes the (1) Descriptive Data, (2) Results of Research Questions, and (3) Summary

#### Descriptive Data

Four of the original five battered women's shelters were included. Prior to the collection of any data, women living in the Ujima House declined to participate. One hundred fifty women, representing three categories of women (sheltered battered, nonsheltered battered, nonbattered), participated in the study. The sheltered battered women ( $n = 50$ ) lived in one of the four participating battered women's shelters. The nonsheltered battered women ( $n = 50$ ) attended weekly community support groups

sponsored by each of the four shelters. The nonbattered women ( $n = 50$ ) were students enrolled in either an introductory or upper division psychology class at Middle Tennessee State University.

All statistical analyses performed for this study incorporated the use of the Statistical Package for the Social Sciences (SPSS 10.1 for Windows). All tests of the research questions incorporated  $p < .05$  alpha levels. The investigator obtained descriptive statistics on the sample as a whole, as well as on each of the three categories of women (sheltered battered, nonsheltered battered, nonbattered).

The ages of the participants included: 20 or under (16.7 percent); 21-29 (35.3 percent); 30-39 (28.0 percent); 40-49 (12.7 percent); 50-59 (5.3 percent); over 60 (2.0 percent). Race-ethnicity included: Caucasian (67.3 percent); African-American (22.7 percent); Hispanic (2.7 percent); Asian or middle eastern (2.0 percent); American Indian (4.7 percent); mixed (.7 percent). The average combined household income included: below 10,000 (36.7 percent); between 10,000-20,000 (14.7 percent); between 20,000-30,000 (18.0 percent); between 30,000-40,000 (10.7 percent); between 40,000-50,000 (8.0 percent); over 50,000 (12.0 percent). The highest educational level completed by the participants included: did not complete high school (13.3 percent); high school diploma (20.0 percent); some college (46.0 percent); college diploma (20.7 percent). Present employment status included: employed full-time (34.7 percent); employed part-time (29.3 percent); self-employed (2.0 percent); unemployed (33.3 percent). Time presently spent living in a shelter for battered women included: 1-3 days (5.3 percent); 4-7 days (10.7 percent); 8-14 days (4.7 percent); 15-21 days (4.0 percent); more than 30 days (8.7

percent); does not apply (66.0 percent). Time spent attending community support groups included: 1-3 meetings (10.0 percent); 4-7 meetings (6.0 percent); 8-14 meetings (4.0 percent); more than 15 meetings (13.3 percent); does not apply (66.7 percent). Number of years lived with abuser included: less than 1 year (11.3 percent); 1-2 years (10.0 percent); 3-5 years (14.0 percent); 5-10 years (16.7 percent); more than 10 years (14.7 percent); does not apply (33.3 percent).

Table 1 presents the demographic information for the three categories of women (sheltered battered, nonsheltered battered, nonbattered). The demographic variables are expressed as numbers and percentages. Ages among the three categories of women show 78 percent of the sheltered battered women ranged in age from 21-39 years. Seventy-six percent of the nonsheltered battered women ranged in age from 21-49 years. Eighty-two percent of the nonbattered women were 29 years or younger.

The ethnic backgrounds of the three categories of women shared similar percentages. Caucasian women represented the majority in all three categories: sheltered battered (54 percent), nonsheltered battered (74 percent), and nonbattered (74 percent). African-Americans represented the second most frequent race among the three categories of women: sheltered battered (26 percent), nonsheltered battered (20 percent), and nonbattered (22 percent).

According to the reported percentages, a close relationship existed among the educational levels of the sheltered battered category. Twenty-six percent of the sheltered battered women failed to complete high school, 22 percent received a high school diploma, 30 percent completed some college, and 22 percent obtained a college diploma.

Comparably, the nonsheltered battered category reported 14 percent failed to complete high school, 38 percent obtained a high school diploma, 20 percent completed some college, and 28 percent received a college diploma. Due to the selection of the nonbattered population, 88 percent completed some college and 12 percent obtained a college diploma.

Further examination of the data in Table 1 shows the majority (54 percent) of the sheltered battered women as unemployed and 38 percent as full-time employed. In contrast, data showed 20 percent of the nonsheltered battered women as unemployed and the majority (54 percent) as full-time employed. Twenty-six percent of the nonbattered women were unemployed, 12 percent were full-time employed and the majority (60 percent) was part-time employed.

Additionally, an analysis of the demographic data indicated the amount of time the sheltered battered women lived in the battered women's shelters and the amount of time the nonsheltered battered women attended community support group meetings. Forty-eight percent of the sheltered battered women lived in the battered women's shelter from 1-7 days. Forty-eight percent of the nonsheltered battered women attended 1-7 weekly community support group meetings. Furthermore, the investigator conducted analyses on income and number of years spent with abuser. The results of all demographic analyses are presented in Table 1.

### Results of Research Questions

The results of the MANOVA showed overall significant differences among the three categories of women (sheltered battered, nonsheltered battered, nonbattered) on the three dependent variables (physical activity, self-esteem, depression) with an  $F(9, 353) = 253.73$ ,  $p < .05$ , Wilks' Lambda = .007. Further, univariate F tests showed significant differences on each of the three dependent variables (physical activity, self-esteem, depression) with an  $F(3, 147) = 416.687$ ,  $p < .05$ ;  $F(3, 147) = 1213.026$ ,  $p < .05$ ; and  $F(3, 147) = 248.011$ ,  $p < .05$ , respectively.

Tukey post hoc tests revealed pair-wise comparisons. Tukey post hoc tests also examined specifically which categories of women differed on the three dependent measures. Results of Tukey post hoc tests showed a significant difference ( $p < .05$ ) in mean physical activity levels between sheltered battered women (26.92, SD 13.03) and nonsheltered battered women (37.80, SD 11.22). A significant difference ( $p < .05$ ) existed in mean physical activity levels between sheltered battered women (26.92, SD 13.03) and nonbattered women (37.62, SD 11.52).

Results of Tukey post hoc tests showed a significant difference ( $p < .05$ ) in the mean self-esteem levels between sheltered battered women (27.00, SD 5.87) and nonbattered women (31.08, SD 5.08). In addition, Tukey post hoc tests showed a significant difference ( $p < .05$ ) in mean self-esteem levels between nonsheltered battered women (27.20, SD 6.38) and nonbattered women (31.08, SD 5.03).

Results of Tukey post hoc tests showed a significant difference ( $p < .05$ ) in mean depression levels between sheltered battered women (32.24, SD 11.12) and nonsheltered

battered women (26.12, SD 13.29). A significant difference ( $p < .05$ ) also existed in mean depression levels between sheltered battered women (32.24, SD 11.12) and nonbattered women (15.46, SD 9.73). Further, a significant difference ( $p < .05$ ) existed in the mean depression levels between nonsheltered battered women (26.12, SD 13.29) and nonbattered women (15.46, SD 9.73).

Descriptive data illustrating the significant differences among the three categories of women (sheltered battered, nonsheltered battered, nonbattered) and the three dependent variables (physical activity, self-esteem, depression) are shown in Table 2. Table 3 shows the means and standard deviations among the three categories of women for each of the three dependent variables.

Pearson product-moment correlations were used to assess data on the sample as a whole as well as by each of the three categories of women (sheltered battered, nonsheltered battered, nonbattered). Correlations showed the nature of the relationships among the three dependent variables (physical activity, self-esteem, depression). Data, presenting the matrix correlation coefficients among the three dependent variables on the sample as a whole, are shown in Table 4. Correlations on the entire sample showed a positive correlation ( $r = .283$ ,  $p < .05$ ) between levels of physical activity and self-esteem. Data also showed a negative correlation ( $r = -.349$ ,  $p < .05$ ) between levels of physical activity and depression. A negative correlation ( $r = -.699$ ,  $p < .05$ ) existed between levels of self-esteem and depression.

The nature of the relationships among the three dependent variables to each of the three categories of women was also examined. Tables 5, 6, and 7 show the matrix

correlation coefficients for the individual categories of women. Data from the sheltered battered category illustrated a positive correlation ( $r = .296, p < .05$ ) between physical activity levels and self-esteem levels. A nonsignificant correlation ( $r = -.252, p > .05$ ) existed between physical activity levels and depression levels. Results showed a negative correlation ( $r = -.666, p < .05$ ) between levels self-esteem and depression.

Data from the nonsheltered battered category revealed a correlation ( $r = .369, p < .05$ ) between levels of physical activity and self-esteem. A negative correlation ( $r = -.348, p < .05$ ) existed between levels of physical activity and depression. A significant, negative correlation ( $r = -.752, p < .05$ ) existed between levels of self-esteem and depression.

Correlations examining levels of physical activity and self-esteem of the nonbattered category showed a nonsignificant correlation ( $r = .049, p > .05$ ). Results showed a nonsignificant correlation ( $r = -.104, p > .05$ ) between levels of physical activity and depression. However, a negative correlation ( $r = -.543, p < .05$ ) existed between levels of self-esteem and depression.

### Summary

A MANOVA compared the levels of physical activity, self-esteem, and depression among three categories of women (sheltered battered, nonsheltered battered, nonbattered). Pearson product-moment correlations examined the nature of the relationships among the three dependent variables (physical activity, self-esteem,

depression). Correlations assessed the data on the sample as a whole and by each of the three categories of women.

The analysis revealed overall significant differences among the three categories of women on the three dependent variables. Univariate F tests also showed significant differences on each of the three dependent variables. Pair-wise comparisons were identified by the use of Tukey post hoc tests. Significant differences were found in mean physical activity levels between sheltered battered women and nonsheltered battered women and between sheltered battered women and nonbattered women. Significant differences were also identified in mean self-esteem levels between sheltered battered women and nonbattered women and between nonsheltered women and nonbattered women. Results showed significant differences in mean depression levels between sheltered battered women and nonsheltered battered women, between sheltered battered women and nonbattered women, and between nonsheltered battered women and nonbattered women.

A positive correlation existed on the entire sample between levels of physical activity and self-esteem. Data showed negative correlations between levels of physical activity and depression and between levels of self-esteem and depression.

Data from the sheltered battered women category showed a positive correlation between levels of physical activity and self-esteem. A negative correlation existed between levels of self-esteem and depression. Data from the nonsheltered battered women category showed a positive correlation between levels of physical activity and self-esteem. A negative correlation existed between levels of physical activity and

depression. A significant, negative correlation existed between levels of self-esteem and depression. Data from the nonbattered women category showed a negative correlation between levels of self-esteem and depression.

## CHAPTER V

### Discussion

This chapter includes (1) Summary of Research Questions, (2) Conclusions, and (3) Recommendations.

#### Summary of Research Questions

The research questions testing resulted in the following:

##### Research Question 1

Is there a statistically significant difference in the physical activity levels among sheltered battered women, nonsheltered battered women, and nonbattered women? A statistically significant difference existed in physical activity levels among sheltered battered women, nonsheltered battered women, and nonbattered women.

##### Research Question 2

Is there a statistically significant difference in the self-esteem levels among sheltered battered women, nonsheltered battered women, and nonbattered women? A statistically significant difference existed in self-esteem levels among sheltered battered women, nonsheltered battered women, and nonbattered women.

##### Research Question 3

Is there a statistically significant difference in the depression levels among sheltered battered women, nonsheltered battered women, and nonbattered women? A

statistically significant difference existed in depression levels among sheltered battered women, nonsheltered battered women, and nonbattered women.

#### Research Question 4

Is there a statistically significant relationship between the levels of physical activity and self-esteem among sheltered battered women, nonsheltered battered women, and nonbattered women? A statistically significant, positive relationship existed between levels of physical activity and self-esteem for sheltered battered women, nonsheltered battered women, and nonbattered women.

#### Research Question 5

Is there a statistically significant relationship between the levels of physical activity and depression among sheltered battered women, nonsheltered battered women, and nonbattered women? A statistically significant, negative relationship existed between levels of physical activity and depression for sheltered battered women and nonsheltered battered women.

### Conclusions

The following conclusions resulted within the limitations of this study:

1. A significant difference existed in physical activity levels between sheltered battered women and nonbattered women. This finding is consistent with Walker's (1994) research, which stated physical activity levels decreased for women following their first abusive incident. Walker noted 61 percent of the abused women

rated themselves “more active” (p. 33) prior to the first abusive incident. Following the first abusive incident, only 22 percent of abused women rated themselves as more active.

2. No significant difference existed in physical activity levels between nonsheltered battered women and nonbattered women. Based on the results of the data, a possible explanation for the nonsignificant finding may involve the employment status of both groups. Seventy-six percent of the nonsheltered battered women were either full-time or part-time employed. In comparison, seventy-four percent of the nonbattered women were either full-time or part-time employed. One of the three components of the Baecke Questionnaire of Habitual Physical Activity was work activity. Thus, these two categories contributed to the work activity category.

3. No significant difference existed in self-esteem levels between sheltered battered women and nonsheltered battered women. Based on the results of the data, a possible explanation for the nonsignificant finding may involve the support system surrounding both groups. Specifically, the sheltered battered women resided in battered women’s shelters and the nonsheltered battered women attended weekly community support groups. Another possible explanation may include the educational levels of both groups. Seventy-four percent of the sheltered battered women and 86 percent of the nonsheltered battered women received at least a high school diploma, thus both groups of women may have experienced a sense of accomplishment.

4. A significant difference existed in self-esteem levels between sheltered

battered women and nonbattered women. These findings are consistent with research obtained by Cantrell (1997). Cantrell related the effects of physical abuse to the lower self-esteem level of the victim.

5. Nonbattered women exhibited a significantly higher mean self-esteem level than nonsheltered battered women. In support of the significant differences to self-esteem levels identified among sheltered battered women, nonsheltered battered women, and nonbattered women, Roberts (1998) noted a comparison study of battered women ( $n = 48$ ) and nonbattered women ( $n = 48$ ) that revealed the emotional and controlling forms of abuse significantly lowered the self-esteem levels of battered women. In addition, Lynch & Graham-Berman (2000) stated abused women exhibited decreased levels of self-esteem possibly resulting from a diminished sense of self that women felt following acts of physical and psychological abuse.

Research conducted by Aguilar & Nightingale (1994) also supported the findings in this study regarding decreased levels of self-esteem among battered women. According to Aguilar & Nightingale, a significant relationship existed between low self-esteem and battered women. However, results were unclear if women with low self-esteem were more likely to be targeted for battering relationships or if the battering relationship caused the decrease in self-esteem levels. Regardless of the cause, the relationship between low self-esteem and abuse was evident. Research supporting this relationship identified increased physical and psychological abuse resulted in lower levels of self-esteem and psychological well-being.

6. In agreement with the findings in this study regarding high levels of depression among battered women, Walker (1984) stated depression was the primary mental health response for battered women. The results of a study involving 164 moderately to severely depressed women showed battered women at a significantly greater risk for developing major depression (Campbell et al., 1997). Lynch & Graham-Bermann (2000) and the Center for Medical Consumers (1990) supported the previous findings that battered women exhibited significantly higher levels of depression. Additionally, the results from data collected by the National Institute of Mental Health Epidemiological Catchment Area study showed battered women had a higher prevalence (63 percent) of major depression (Campbell et al.).

7. A positive correlation existed between levels of physical activity and self-esteem for the total sample. Bradley (1996), CDC (1999), and Hayes et al. (1999) concurred with findings in this study showing that increased levels of physical activity resulted in improved self-esteem scores. Through a meta-analysis of 16 studies investigating the relationship between physical activity levels and self-esteem levels, Morgan (1997) found “exercise programs are associated with significant increases in self-esteem scores of participants” (p. 129).

8. A negative correlation existed between levels of physical activity and depression for the total sample. Support for this finding included the results of a meta-analysis conducted by Osness (1998). Osness identified a direct relationship between individuals’ levels of physical activity and their incidences of depression. Results

showed individuals engaging in higher levels of physical activity demonstrated lower levels of depression.

9. A negative correlation existed between levels of self-esteem and depression for the total sample. In support of this finding, Morgan (1997) documented a relationship between low levels of self-esteem and depression.

10. A positive correlation existed between levels of physical activity and self-esteem for sheltered battered women. In support of the finding in this study, Baldwin & Coureya (1997) noted pronounced increases in the self-esteem levels among study participants following a program of physical exercise. Furthermore, Morgan (1997) noted the findings from a study involving 32 clinically depressed women who exhibited significant improvements in self-esteem following exercise.

11. A negative correlation existed between levels of self-esteem and depression for sheltered battered women. The results of a 1998 study involving 108 physically abused women showed women three times more likely to experience anxiety, five times more likely to experience depression, and six times more likely to have a low level of self-esteem than men (Roberts, 1998).

12. A positive correlation existed between levels of physical activity and self-esteem for nonsheltered battered women. Greenburg & Oglesby (1997) supported the findings in this study regarding the benefit to self-esteem from participating in physical activity. In addition, Palmer (1995) noted the results of an eight-week walking program on self-esteem levels, in which a walking program provided participants with significant improvements in self-esteem levels.

13. A negative correlation existed between levels of physical activity and depression for nonsheltered battered women. Seraganian (1993) concurred with this finding stating the results of a study involving the effects of exercise on the depression levels of 43 depressed women. Results showed women in an exercise group demonstrated greater reductions in depression levels than women in either a placebo or no treatment group.

14. No significant correlation existed between levels of physical activity and self-esteem for nonbattered women. Based on the results of this study, a possible explanation for the nonsignificant finding may include the reality that this group of women was not battered. In addition the nonbattered women's level of self-esteem may not have been contingent on their physical activity level. Thus, the nonbattered women may have been exposed to multiple opportunities for positive psychological, educational and social growth.

15. Results showed no significant relationship between physical activity levels and self-esteem levels or physical activity levels and depression levels of nonbattered women. These findings conflicted with previous findings regarding the effect of physical activity on levels of self-esteem and depression. The results of an extensive literature review showed participating in physical activity enhanced levels of self-esteem (Baldwin & Coureya, 1997; Caruso & Gill, 1992; Greenburg & Oglesby, 1997; Isreal, 1998; Morgan, 1997). In addition, empirical evidence suggested participating in physical activity lowered depression levels (Bower, 1986; Bradley, 1996; Brill & Cooper, 1993; Craft & Landers, 1998; Greesburg & Oglesby, 1997; Palmer, 1995).

This study will add to the body of literature on battered women. The information provided through this study could be useful in the quest to assist battered women in the areas of physical and psychological health. Support to battered women could include the services provided by shelters, health care, social workers, psychologists, and society in general.

While more experimental research should be conducted to prove the effectiveness of physical activity on self-esteem and depression levels of battered women, this study provides a foundation upon which future research can build. Thus, the findings from this study combined with additional research findings could instigate the movement to incorporate physical activity as part of the services provided by battered women's shelters.

### Recommendations

Based on the findings of this study, the following recommendations are made to guide future research:

1. Future investigation should include a different population of nonbattered women.
2. A similar study should be conducted using a different physical activity scale.
3. An investigation analyzing the demographic data to findings in this study should be conducted.

4. An experimental design study should be conducted on physical activity, self-esteem, and depression levels of sheltered battered women, nonsheltered battered women, and nonbattered women.

5. An experimental design study should be conducted implementing a physical activity program into a battered women's shelter.

Table 1.

Demographic Information for Sheltered Battered Women, Nonsheltered BatteredWomen, and Nonbattered Women

Variable	Sheltered Battered		Nonsheltered Battered		Nonbattered	
	Number	Percent	Number	Percent	Number	Percent
<b>Age</b>						
<20	3	6.0	6	12.0	16	32.0
21-29	19	38.0	9	18.0	25	50.0
30-39	20	40.0	15	30.0	7	14.0
40-49	3	6.0	14	28.0	2	4.0
50-59	4	8.0	4	8.0	0	0.0
>60	1	2.0	2	4.0	0	0.0
<b>Race</b>						
Caucasian (white)	27	54.0	37	74.0	37	74.0
African-American	13	26.0	10	20.0	11	22.0
Hispanic	3	6.0	1	2.0	0	0.0
Asian or Middle Eastern	2	4.0	0	0.0	1	2.0
American Indian	5	10.0	2	4.0	0	0.0
Mixed	0	0.0	0	0.0	1	2.0
<b>Income</b>						
<10,000	28	56.0	8	16.0	19	38.0
10,000-20,000	6	12.0	9	18.0	7	14.0
20,000-30,000	9	18.0	13	26.0	5	10.0
30,000-40,000	1	2.0	9	18.0	6	12.0
40,000-50,000	2	4.0	4	8.0	6	12.0
>50,000	4	8.0	7	14.0	7	14.0
<b>Education Level</b>						
<H.S. Diploma	13	26.0	7	14.0	0	0.0
H.S. Diploma	11	22.0	19	38.0	0	0.0
Some College	15	30.0	10	20.0	44	88.0
College Diploma	11	22.0	14	28.0	6	12.0

Table 1. (cont.)

Variable	Sheltered Battered		Nonsheltered Battered		Nonbattered	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
<b>Employ. Status</b>						
Full-Time	19	38.0	27	54.0	6	12.0
Part-Time	3	6.0	11	22.0	30	60.0
Self-Employed	1	2.0	2	4.0	1	2.0
Unemployed	27	54.0	10	20.0	13	26.0
<b>Time In Shelter</b>						
1-3 Days	8	16.0	0	0.0	0	0.0
4-7 Days	16	32.0	0	0.0	0	0.0
8-14 Days	7	14.0	0	0.0	0	0.0
15-21 Days	6	12.0	0	0.0	0	0.0
>30 Days	13	26.0	0	0.0	0	0.0
<b>Time In Support Group</b>						
1-3 Meetings	0	0.0	15	30.0	0	0.0
4-7 Meetings	0	0.0	9	18.0	0	0.0
8-14 Meetings	0	0.0	6	12.0	0	0.0
> 15 Meetings	0	0.0	20	40.0	0	0.0
<b>Years With Abuser</b>						
< 1 Year	11	22.0	6	12.0	0	0.0
1-2 Years	8	16.0	7	14.0	0	0.0
3-5 Years	11	22.0	10	20.0	0	0.0
5-10 Years	15	30.0	10	20.0	0	0.0
> 10 Years	5	10.0	17	34.0	0	0.0

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(Note: n = 50 sheltered battered women; 50 nonsheltered battered women; 50 nonbattered women)

Table 2.

Multiple Comparisons of p-Values for the Three Categories of Women on the Three Dependent Variables Using Tukey HSD

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	Physical Activity	Self-Esteem	Depression
<b>Sheltered Battered</b>			
Nonsheltered Battered	(p < .05*)	(p > .05)	(p < .05*)
Nonbattered	(p < .05*)	(p < .05*)	(p < .05*)
<b>Nonsheltered Battered</b>			
Sheltered Battered			
Nonbattered	(p > .05)	(p < .05*)	(p < .05*)
<b>Nonbattered</b>			
Sheltered Battered			
Nonsheltered Battered			

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Note: (n = 50 sheltered battered women; 50 nonsheltered battered women; 50 nonbattered women)

Note: \* denotes significance

Table 3.

Mean Scores and Standard Deviations for the Three Categories of Women on  
the Three Dependent Variables

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	<b>Sheltered Battered</b>		<b>Nonsheltered Battered</b>		<b>Nonbattered</b>	
	<b>Mean</b>	<b>S.D.</b>	<b>Mean</b>	<b>S.D.</b>	<b>Mean</b>	<b>S.D.</b>
Physical Activity	26.92	13.03	37.80	11.22	37.62	11.52
Self-Esteem	27.00	5.87	27.20	6.38	31.08	5.03
Depression	32.24	11.12	26.12	13.29	15.46	9.73

---

(Note: n = 50 sheltered battered women; 50 nonsheltered battered women; 50 nonbattered women)

Table 4.

Correlations Between the Three Dependent Variables for the Sample as a Whole


---

	<b>Physical Activity</b>	<b>Self-Esteem</b>	<b>Depression</b>
<b>Physical Activity</b>		$r = .283^*$	$r = -.349^*$
<b>Self-Esteem</b>			$r = -.699^*$
<b>Depression</b>			

---

Note: (n = 50 sheltered battered women; 50 nonsheltered battered women; 50 nonbattered women)

Note: \* denotes significance at  $p < .05$

Table 5.

Correlations Between the Three Dependent Variables for Sheltered Battered Women


---

	<b>Physical Activity</b>	<b>Self-Esteem</b>	<b>Depression</b>
<b>Physical Activity</b>		$r = .296^*$	$r = -.252$
<b>Self-Esteem</b>			$r = -.666^*$
<b>Depression</b>			

---

Note: (n = 50 sheltered battered women)

Note: \* denotes significance at p < .05 level

Table 6.

Correlations Between the Three Dependent Variables for Nonsheltered Battered Women


---

	<b>Physical Activity</b>	<b>Self-Esteem</b>	<b>Depression</b>
<b>Physical Activity</b>		$r = .369^*$	$r = -.348^*$
<b>Self-Esteem</b>			$r = -.752^*$
<b>Depression</b>			

---

Note: (n = 50 nonsheltered battered women)

Note: \* denotes significance at p < .05 level

Table 7.

Correlations Between the Three Dependent Variables for Nonbattered Women


---

	Physical Activity	Self-Esteem	Depression
<b>Physical Activity</b>		$r = .049$	$r = -.104$
<b>Self-Esteem</b>			$r = -.543^*$
<b>Depression</b>			

---

Note: (n = 50 nonbattered women)

Note: \* denotes significance at p < .05 level

APPENDIX A

PROTOCOL FOR TEST ADMINISTRATORS

### Protocol for Test Administrators

The following information should be read to all subjects prior to the completion of the consent form, demographic form, or any of the three questionnaires.

Thanks to all of you for volunteering to participate in this study. Your responses to the questionnaires are very important in the completion of this project. Prior to the completion of the demographic form or any of the three questionnaires, you will be asked to sign a consent form. The demographic form and all three questionnaires will have instructions at the top of the page. It is necessary that each of you understand what the following terms specifically mean: "physical activity" is any activity that requires the use of skeletal or muscular movement. "Battering" means the abuser (intimate partner) using a pattern of behavior such as emotional, physical, or sexual abuse to establish control and power over another person. An "intimate partner" represents anyone with whom you have been sexually involved.

If you have any questions at anytime during the completion of these forms or if you do not read well, please ask for assistance. Your consent forms will be taken up immediately. However, in order to ensure the confidentiality of your responses, all other forms will be taken up separately.

Sincerely,

Tina M. Bozeman  
Doctoral Candidate  
Middle Tennessee State University

APPENDIX B

SUBJECT DEMOGRAPHIC FORM

## Demographic Form

Instructions: Read the following questions and circle the letter of the answer that best describes your present situation. Do **NOT** write your name anywhere on this form. All answers will remain anonymous.

1. Age:
  - a. 20 or under
  - b. 21-29
  - c. 30-39
  - d. 40-49
  - e. 50-59
  - f. 60 or over
  
2. Race:
  - a. Caucasian (white)
  - b. African-American
  - c. Hispanic
  - d. Asian or middle eastern
  - e. American Indian
  - f. Mixed
  
3. Average combined household income: (yearly)
  - a. Below \$10,000
  - b. Between \$10,000-\$20,000
  - c. Between \$20,000-\$30,000
  - d. Between \$30,000-\$40,000
  - e. Between \$40,000-\$50,000
  - f. Over \$50,000
  
4. Highest educational level completed:
  - a. Did not complete high school
  - b. High school diploma
  - c. Some college
  - d. College diploma
  
5. Present employment status:
  - a. Employed full-time
  - b. Employed part-time
  - c. Self-employed
  - d. Unemployed

6. Do you presently live in a shelter for battered women? If so, how long? If yes, skip question #7.
  - a. Yes, 1-3 days
  - b. Yes, 4-7 days
  - c. Yes, 8-14 days (1 to 2 weeks)
  - d. Yes, 15-21 days (2 to 3 weeks)
  - e. Yes, 30+ days
  - f. No
  
7. Do you currently attend a support group for battered women in the community? If so, how long have you attended?
  - a. Yes, 1-3 meetings
  - b. Yes, 4-7 meetings
  - c. Yes, 8-14 meetings
  - d. Yes, 15+ meetings
  - e. No
  
8. How many years have you lived with your abuser?
  - a. Less than 1 year
  - b. Between 1-2 years
  - c. Between 3-5 years
  - d. Between 5-10 years
  - e. More than 10 years
  - f. Does not apply (nonbattered)

APPENDIX C

BAECKE QUESTIONNAIRE OF HABITUAL PHYSICAL ACTIVITY

## Baecke Questionnaire of Habitual Physical Activity

1. What is your main occupation 1-3-5
2. At work I sit  
never/seldom/sometimes/often/always 1-2-3-4-5
3. At work I stand  
never/seldom/sometimes/often/always 1-2-3-4-5
4. At work I walk  
never/seldom/sometimes/often/always 1-2-3-4-5
5. At work I lift heavy loads  
never/seldom/sometimes/often/very often 1-2-3-4-5
6. After work I am tired  
very often/often/sometimes/seldom/never 5-4-3-2-1
7. At work I sweat  
very often/often/sometimes/seldom/never 5-4-3-2-1
8. In comparison with others my own age I think my work is physically  
much heavier/heavier/as heavy/lighter/much lighter 5-4-3-2-1
9. Do you play sport?  
yes/no  
If yes:  
-which sport do you play most frequently? Intensity 0.76 - 1.26 - 1.76  
-how many hours a week? <1/1-2/2-3/3-4/>4 Time 0.5-1.5-2.5-3.5-4.5  
-how many months a year? <1/1-3/4-6/7-9/>9 Proportion 0.04-0.17-0.42-0.67-0.92
- If you play a second sport:  
-which sport do you play most frequently? Intensity 0.76 - 1.26 - 1.76  
-how many hours a week? <1/1-2/2-3/3-4/>4 Time 0.5-1.5-2.5-3.5-4.5  
-how many months a year? <1/1-3/4-6/7-9/>9 Proportion 0.04-0.17-0.42-0.67-0.92
10. In comparison with others my own age I think my physical activity during leisure time is  
much more/more/the same/less/much less 5-4-3-2-1
11. During leisure time I sweat  
very often/often/sometimes/seldom/never 5-4-3-2-1
12. During leisure time I play sport  
never/seldom/sometimes/often/very often 1-2-3-4-5
13. During leisure time I watch television  
never/seldom/sometimes/often/very often 1-2-3-4-5
14. During leisure time I walk  
never/seldom/sometimes/often/very often 1-2-3-4-5
15. During leisure time I cycle  
never/seldom/sometimes/often/very often 1-2-3-4-5
16. How many minutes do you walk and/or cycle per day to and from work, school, and shopping?  
<5/5-15/15-30/30-45/>45 1-2-3-4-5

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APPENDIX D

ROSENBERG SELF-ESTEEM SCALE

### Rosenberg Self-Esteem Scale

The scale is a ten-item Likert scale with items answered on a four-point scale from **strongly agree** to **strongly disagree**. The scoring for some items needs to be reversed so that in each case the scores go from less to more self-esteem. The original sample for which the scale was developed consisted of 5,024 high school juniors and seniors from 10 randomly selected schools in New York State.

#### Scale Items and Scoring Procedure

The ten scale items were presented, as below, with these instructions: BELOW IS A LIST OF STATEMENTS DEALING WITH YOUR GENERAL FEELINGS ABOUT YOURSELF. IF YOU **STRONGLY AGREE**, CIRCLE **SA**. IF YOU **AGREE** WITH THE STATEMENT, CIRCLE **A**. IF YOU **DISAGREE**, CIRCLE **D**. IF YOU **STRONGLY DISAGREE**, CIRCLE **SD**.

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

APPENDIX E

CENTER FOR EPIDEMIOLOGIC STUDIES—DEPRESSION SCALE

**Center for Epidemiologic Studies Depression Scale**  
National Institute of Mental Health

Format for Self-Administered Use.

Circle the number for each statement which best describes how often you felt or behaved this way—  
DURING THE PAST WEEK.

	0	1	2	3
	Rarely or None of the Time	Some or a Little of the Time	Occasionally or a Moderate Amount of Time	Most or All of the Time
	(Less than 1 Day)	(1-2 Days)	(3-4 Days)	(5-7 Days)
DURING THE PAST WEEK:				
1. I was bothered by things that usually don't bother me.....	0	1	2	3
2. I did not feel like eating; my appetite was poor.....	0	1	2	3
3. I felt I could not shake off the blues even with help from my family or friends.....	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 dislike me.....	0	1	2	3
20. I could not get "going".....	0	1	2	3

APPENDIX F

SUBJECT CONSENT FORM

### Subject Consent Form

I understand that my role in this research project is to answer the questions to three separate questionnaires. I understand that my participation in this research project is completely voluntary and that I can withdraw at any time. I further understand that the researcher will use my responses to the surveys for presentation and publication.

In addition, I understand that my name and information will remain completely confidential. I also understand that all surveys will remain in a locked file until the research is complete. Upon completion of this project, I understand that all surveys will be destroyed. Finally, I understand that no physical or psychological damage is expected to come to me through my participation in this research project.

Name (signature) \_\_\_\_\_

Date \_\_\_\_\_

APPENDIX G

INSTITUTIONAL REVIEW BOARD

APPROVAL FORM

**Elementary and Special Education Department**

P.O. Box 69  
 Middle Tennessee State University  
 Murfreesboro, Tennessee 37132  
 (615) 898-2680



To: Tina Bozeman

From: Nancy Bertrand, Chair *Nancy Bertrand*  
 MTSU Institutional Review Board

Re: "A Comparison of the Levels of Self-Esteem, Depression, and  
 Physical Activity Among Sheltered Battered Women,  
 Nonsheltered Battered Women, and Nonbattered Women"  
 Protocol #01-163

Date: March 14, 2001

The above named human subjects research proposal has been reviewed and approved for 150 subjects. This approval is for one year only. Should the project extend beyond one year or should you desire to change the research protocol in any way, you must submit a memo describing the proposed changes or reasons for extensions to your college's IRB representative for review.

Best of luck in the successful completion of your research.

cc: Dr. Doug Winborn

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