THE ROLE OF PHYSICAL ACTIVITY AMONG NATIVE AMERICAN SURVIVORS OF DOMESTIC VIOLENCE

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DEDICATION

I dedicated this dissertation to the missing and murdered Indigenous women, those Native American women who never received justice for their experiences of

violence, and those survivors who continue to fight daily for themselves, for their children, and for our communities.

I also, dedicate this to every little Native American girl who desires to make a difference and to my grandfather, the late Derel Been.

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Abstract: Native American women have the highest rate of domestic violence than any other population and experience two to three times more violence than any other ethnicity (Saylor's & Daliparthy, 2006). The trauma associated with such incidences often does not end when the assault does; the psychological distress associated with domestic violence includes depression, posttraumatic stress disorder, substance abuse, and suicide among others (Bryant-Davis, Chung, & Tillman, 2009). Over the last twenty years a great deal of research has focused on domestic violence, including attempts to discover coping strategies that women can employ to protect themselves from the psychological impact of victimization. Although literature has highlighted intervention efforts, utilization of these services by Native Americans is extremely low due to numerous barriers specifically faced by this population (Olsen & Wahab, 2004). One non-traditional coping strategy that has been overlooked is the role of physical activity. Prior research has demonstrated the important relationship between physical activity and mental health, including improved symptoms of depression, the most commonly reported outcome of domestic violence (Scully, Kremer, Meade, Graham & Dudgeon, 1998). The purpose of this study was to determine if regular participation in physical activity, including cultural/traditional forms of Native American physical activity, had an impact on self-reported symptoms of depression in Native American female survivors of domestic violence. The participants were thirteen Native American women representing various tribes in the state of Oklahoma. Each participant completed a packet of surveys that included: (1) a demographic form, (2) the Beck Depression Inventory-II for measuring symptoms of depression, and (3) the Modifiable Activity Questionnaire used to assess the physical activity levels of participants. The Spearman rho was utilized to analyze data in order to determine the correlation between self-reported levels of physical activity and depression among participants for both mainstream/non-traditional and cultural/traditional forms of Native American physical activity. The results showed no statistical significance among variables at an alpha level of 0.05. There was an observed negative trending correlation for self-reported symptoms of depression and mainstream physical activity participation, and for self-reported symptoms of depression and cultural/traditional forms of Native American physical activity participation. Further studies are needed to determine if, and how, physical activity participation, both mainstream and cultural/traditional Native American physical activity, can be utilized to cope with symptoms of depression in Native American women who are survivors of domestic violence. Implications and suggestions for future studies are discussed.

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CHAPTER I

INTRODUCTION

Violence against women has been a long going injustice for numerous years with 1 in 3 women worldwide experiencing victimization, either physical and/or sexual violence, in their lifetime (The World Health Organization [WHO], 2017). Native American/American Indian women have the highest rate of victimization than any other ethnic or racial group in the U.S. (Wahab & Olson, 2004); Native American/American Indian women experience two to three times more violence than any other ethnicity (Saylors & Daliparthy, 2006). The National Violence Against Women Survey found that the lifetime rate of physical assault for Native American women to be 64.1% compared to 51.8% for the total population of the U.S. (Olson & Wahab, 2004). In addition to being more at risk for violence, Native American/American Indian women are almost three times more likely to be murdered by a significant other compared to Hispanics and Caucasians, and more likely to sustain a serious injury compared to all other races during these acts of violence (Oetzel & Duran, 2004). The causes for such high rates among this population has been associated with historic trauma and genocide, poverty, alcohol, drugs, lack of judicial control and prosecution of perpetrator, and rural isolation where applicable (Allen, 1985; Burnette, & Cannon, 2014; Malcoe, Duran, & Montgomery,

2004; McEachern, Van Winkle, & Steiner, 1998; Poupart, 2003; Powers, 1988; Robin, et al, 1998; Wahab & Olsen, 2004; Weaver, 2009; Yuan, Koss, Polacca, & Goldman; 2006).

The trauma associated with such incidences often does not end when the assault does; the psychological distress associated with domestic violence/intimate partner violence includes depression, posttraumatic stress disorder (PTSD), substance abuse, and suicide among others (Bryant-Davis, Chung, & Tillman, 2009). Over the last twenty years a great deal of research has focused on domestic violence including attempts to discover coping strategies that women can employ to protect themselves from the psychological impact of victimization. Despite the high prevalence rate in Native American women, research on this subject is scarce within this population. Although literature has highlighted intervention efforts, such as community based interventions, public health and health care systems, and federal and/or national organizational efforts, utilization of these services by Native American/American Indian women is extremely low due to numerous barriers this population faces (Wahab & Olsen, 2004). One non-traditional coping strategy that has been overlooked when examining this population is the role of physical activity. Prior research has demonstrated the important relationship between physical activity and mental health, including improved symptoms of depression and PTSD, both outcomes of domestic violence (Scully, Kremer, Meade, Graham & Dudgeon, 1998). This study hopes to help determine if regular participation in physical activity, both mainstream and cultural/traditional Native American physical activity, has an impact on Native American female victims of domestic violence self-reported symptoms of depression which will add to this deprived body of literature.

Purpose of the Study

The purpose of this study is to extend the line of research on victimization in the lives of Native American/American Indian women by examining the association or relationship between physical activity participation, both mainstream and cultural/traditional Native American physical activity, and symptoms of depression in Native American/American Indian women who are survivors of domestic violence. In addition, it was expected that the findings would give insight as to which type(s) of physical activity/traditional physical activity is most likely to be effective for this population.

This quantitative study will address each of the following research questions: (a) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in physical activity and those who do not? (b) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in traditional Native American physical activity and those who do not? (c) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in physical activity and those who regularly participate in traditional Native American physical activity? (d) Which type(s) of physical activity is most likely to be effective for this population?

Statement of the Problem

Prior research has demonstrated the important relationship between physical activity and mental health, including improved symptoms of depression (Scully, Kremer, Meade,

Graham & Dudgeon, 1998). However, very little literature exists that describes results with survivors of domestic violence. In addition, current research has yet to examine the role of physical activity among Native American women who have been victimized and its effect on their symptoms of depression. As a result, this study will examine the relationship between physical activity, both mainstream and cultural/traditional Native American/American Indian physical activity, and self-reported symptoms of depression among Native American women who are survivors of domestic violence with the intent to determine if physical activity does, in fact, cause a decrease in perceived symptoms of depression among Native American female survivors of domestic violence.

Research Questions and Hypothesis

Can regular participation in physical activity affect mental health (depression) outcomes among Native American/American Indian women who have been victims of/experienced domestic violence within the last year?

Using a nonrandomized, correlation design, participants will be assessed for levels of physical activity using the Modifiable Activity Questionnaire (MAQ) and for symptoms of depression using the Beck Depression Inventory-II (BDI-II).

Null Hypothesis: There is no difference in reported levels of depression in Native American/American Indian women that are survivors of domestic violence who regularly participation in physical activity.

Alternative Hypothesis: There is a difference in reported levels of depression in

Native American/American Indian women that are survivors of domestic violence who regularly participation in physical activity.

Rationale/Significance of the Study

The prevalence of domestic violence/intimate partner violence among Native American/American Indian women in the United States has garnered the interest of policy makers, health care and social service providers, as well as federal organizations for the last few decades (Norton & Manson, 1995; Wahab & Olsen, 2004). The Navajo Nation Council was the first to declare domestic violence/intimate partner violence against Native American/American Indian women as an epidemic back in 1993 (Jones, 2007). Despite this attention and known history of prevalence, the literature on this topic and effective means of coping/intervention within this population is limited. This study will help extend this line of research on domestic violence/intimate partner violence in the lives of Native American/American Indian female survivors by examining the correlation between physical activity, a relevant coping mechanism, and depression, a common outcome of domestic violence/intimate partner violence. In addition, the outcome of the study could begin to bridge this gap in literature regarding effective coping mechanisms/interventions for Native American/American Indian women.

Additionally, past studies have identified barriers to service delivery and needs of Native American/American Indians who have experienced domestic violence/intimate partner violence. The lack of recreation/leisure activities to provide respite for stressed families and lack of interventions that can be incorporated into everyday life were

identified needs of domestic violence victims within this population while racism, fear of losing custody of a child, and lack of trust were a few of the barriers to utilization of services (Alaggia, Dylan, Regehr, 2008). This study addresses these two identified needs and removes some of the barriers as physical activity, a form of recreation/leisure, can be incorporated into everyday experiences of Native American/American Indian women and does not require them to seek services specifically designed for domestic violence/intimate partner violence victims. Furthermore, previous studies have shown that the incorporation of cultural and traditional Native American/American Indian activities, such as physical activity, has proven beneficial in the treatment of victimization within this population (Bien, 2005; Nebelkopf & Penagos, 2005; Saylors & Daliparthy, 2005; Williams, 2005; Villanueva, 2003) as these cultural activities serve as a buffer between stressors and health (Walter & Simoni, 2002). Lastly, this study could provide insight into changes in approaches of prevention and intervention at the tribal level.

Assumptions

1. The Beck Depression Inventory - II is an instrument subject to limitations of self-reporting assessments. Therefore, subject's responses could be influenced by extraneous factors such as prior exposure to the scale, other life changing stressors, and lack of attention to the survey.
2. The Modified Activity Questionnaire (MAQ) is an instrument subject to limitations of self-reporting assessments. Therefore, subject's responses

could be influenced by extraneous factors such as prior exposure to the form, lack of understanding of the form, and lack of attention to the questionnaire.

3. Respondents answered the items on the inventories/questionnaires/scales honestly and accurately, based on their own true feelings and knowledge.
4. Each subject volunteered to participate in the study and accepted the contractual terms without coercion to participate or answer in any particular way.

Limitations

Potential limitations of this study are as follows:

1. Variables not included in this study may be responsible for reported symptoms of depression on The Beck Depression Inventory-II.
2. The Modifiable Activity Questionnaire accounts for only structured leisure time; MAQ often does not account for unstructured daily activities and/or light forms of physical activity.
3. The sample size for the study is small.
4. The sample location is limited to Native American/American Indian women in Oklahoma. This sample cannot be reflective of the 562 total federally recognized tribes in the United States who each have their own language, customs, and tribal systems, nor does it reflect those tribes and indigenous peoples who are not

recognized by the U.S. government due to complexity of ancestry, loss of records, forced marriages, and out-adoption.

Definitions

Native American/American Indian. A person who is an enrolled tribal member of a federally recognized tribe. (Crossland, Palmer, and Brooks, 2013).

Victimization. Acts that include domestic violence and/or sexual assault/abuse.

Sexual assault/abuse. Physically or verbally forced or unwanted physical contact of a sexual nature. (Bohn, 2003).

Domestic violence and/or Intimate partner violence. Any acts of physical violence or aggression towards a significant other/intimate partner, can include physical, verbal, or sexual acts, and/or stalking. (Bohn, 2003; Concepcion, 2004).

Leisure/Recreation. Leisure is often defined as what one chooses to do in their free time that is unobligated from work, personal care such as bathing, grooming, and sleeping, and other required activity such as housekeeping or child care.

Cultural/Traditional Native American physical activity(ies). This term refers to activities that have been a way of life for Native Americans, such as games, sports, running, dancing, art, and are often related to religious and ceremonial traditions that have gone on for centuries (“Games, American Indian,” n.d.; McAvoy, Shirilla, & Flood, 2004; Oxendine, 1988; McAvoy, Shirilla, & Flood, 2004).

Non-Traditional or mainstream physical activity(ies). This term refers to any activity(ies) that are not considered cultural/traditional Native American physical activity(ies).

Physical activity. This term is defined as any bodily movement produced by skeletal muscles that results in energy expenditure. (Caspersen, Powell, & Christenson, 1985).

Exercise. A type of physical activity that is planned or structured. (National Institutes of Health, 2016).

Domestic violence agencies. Agencies that offer family psychotherapy, shelter, victim advocacy, community education, and crisis hotline counseling. (Watlington & Murphy, 2006).

Depression. "Is a constellation of symptoms in a two week period and includes the presence of depressed mood and negative physical symptoms such as psychomotor retardation, sleep disturbances, appetite change," and cognitive impairments such as a slowed though process" (Campbell, Kub, & Rose, 1996).

CHAPTER II

LITERATURE REVIEW

The purpose of this study is to extend the line of research on victimization in the lives of Native American/American Indian (NA/AI) women by examining the association or relationship between physical activity, including cultural/traditional Native American physical activity, and symptoms of depression in NA/AI women who are survivors of domestic violence. To understand the role that physical activity may have on symptoms of depression within this population, and in attempting to narrow the gap in literature, the current chapter will examine scholarship and work related to domestic violence and the health benefits of physical activity particularly with symptoms of depression.

First, the literature review begins with an overview of domestic violence, providing a context within which a discussion can occur about the seriousness of this issue among NA/AI women. This portion of the review will focus on defining the term domestic violence as well as other key terms, the prevalence of abuse, risk and causative factors, and health outcomes associated with domestic violence for both women in general and specifically NA/AI. Next, this chapter will discuss commonly used forms of intervention/coping mechanisms for domestic violence survivors and the barriers to these commonly utilized services associated with this population. This leads to an inspection of the use of physical activity as a way for NA/AI survivors of domestic violence to

safeguard against such negative outcomes, and examines where previous studies have shown an association between physical activity and decreased symptoms of depression. This literature review then discusses the theoretical framework and tools of measurement to be used.

Prevalence of Domestic Violence/Intimate Partner Violence

Domestic Violence (DV) or Intimate Partner Violence (IPV) is defined as any act of physical violence or aggression towards a significant other/intimate partner and can include physical, verbal, emotional, or sexual acts, and/or stalking (Bohn, 2003; Concepcion, 2004; Modi, Palmer, & Armstrong, 2014). This type of violence against women is a serious social and public health problem with 38% of all murders of women globally being committed by an intimate partner (The World Health Organization [WHO], 2017). In the United States, intimate partners accounted for 1,026 murders of women in 2011 (Modi, Palmer, & Armstrong, 2014). Over 42 million women have been the victims of rape, physical assault, and/or stalking by a significant other at some point in their lifetime according to the 2010 National Intimate Partner and Sexual Violence Survey (NISVS) (National Center for Injury Prevention and Control, 2010). This is equivalent to 1.3 to 5.3 million women experiencing some form of DV/IPV annually in the United States (Nelson, Bougatsos, & Blazina, 2012). Although these rates are alarming, minority women are not only more likely to experience DV/IPV, but experience these acts at significantly higher rates of prevalence (Dugan & Apel, 2003; Fairchild et al., 1998; Malcoe & Duran, 2004; Norton & Manson, 1995; Oetzel & Duran,

2004; Olsen & Wahab, 2004; Perry, 2004; Robin, Chester, & Rasmussen, 1998; Saylor's & Daliparthy, 2006; Tjaden & Thoennes, 2000).

Prevalence of DV/IPV in Native American/American Indian Population

NA/AI women, defined for this study as those women who are enrolled tribal members of a federally recognized tribe, experience two to three times more violence than any other ethnic group (Dugan & Apel, 2002; Saylors & Daliparthy, 2006). The National Violence Against Women Survey (NVAWS) found that the lifetime rate of physical assault for NA/AI women to be 64.1% compared to 51.8% for the total population in the U.S. (Olsen & Wahab, 2004). In addition, rates for rape and stalking were higher among NA/AI women at 34.1% and 17.0% compared to women overall at 18.2% for rape and 8.2% for stalking (Oetzel & Duran, 2004). For those women living on Indian reservations the rate of domestic violence can be as much as 50% higher than the next most victimized group (Perry, 2004). Published research in both clinical/hospital and community settings are consistent with the NVAWS findings as their findings also indicate higher prevalence of any type of DV/IPV for NA/AI women at ranges of 46-91% compared to non-Native women at 7-51% (Fairchild et al., 1998; Harwell, Moore, & Spence, 2003; Malcoe & Duran, 2004; Malcoe, Duran, & Montgomery, 2004; Norton & Manson, 1995; Oetzel & Duran, 2004; Robin, Chester, & Rasmussen, 1998; Tjaden & Thoennes, 2000). Norton and Mason's (1995) study of 198 NA/AI women in the Rocky Mountain Region found that 46% of the participants had a history of DV/IPV. Fairfield et al. (1998) administered a survey on the Navajo Reservation to 341 women in an Indian

Health Service hospital regarding DV and found that 52.5% had experienced DV in their lifetime including verbal (40.5%), physical (41.9%), and sexual abuse (12.1%). A 2004 community study by Malcoe and Duran using 422 NA/AI women in Oklahoma found that 82% of their participants reported experiencing IPV in their lifetime.

When looking at contextual variables, such as severity of victimization, results for NA/AI women can be disturbing. The National Crime Victimization Survey (NVCS) between 1992-2005 found that NA/AI women were at least two times more likely to face an armed perpetrator and to be hit compared to Caucasian and African American women (Bachman et al., 2010; Dugan & Apel, 2002). In addition, NA/AI women are more likely to endure physical injuries and more likely to need medical care than other women (Bohn, 1998; Futures without Violence, 2008; Krishman et al., 1997; U.S. Department of Justice, 2008). The increase in severity of IPV leads to an increase risk of DV/IPV homicide among NA/AI women as well. Violence against women in the United States is rampant, but NA/AI women are 3 times more likely to be murdered during these acts of violence than Hispanics or Caucasians (Arbuckle, Olson, Howard, Brillman, Anctil, & Sklar, 1996; Oetzel & Duran, 2004). The rate of murders continues to jump above the national average when examining those committed on reservations, with some reservations IPV murder rates at more than 10 times the national average (Modi, Palmer, & Armstrong, 2014).

As an indication of the prevalence of DV/IPV, "'Indian love' has become slang for such abuse" (Tehee & Esqueda, 2008). Tehee and Esqueda (2008) believe this

lenience towards violence in NA/AI women is a psychological adaption to the high occurrence of DV/IPV as shown by a varied perception of DV/IPV in NA/AI women. Tehee and Esqueda (2008) conducted face to face interviews with twenty NA/AI women and twenty European American women. In addition to assess the attitudes toward violence the authors used the Battered Women's Scale (BWS) measuring self concept and gender role trait attributions and the Attitudes Towards Violence Scale (ATVS) with subscales of Culture of Violence and Reactive Violence (Tehee and Esqueda, 2008). The authors found that NA/AI women tended to define physical abuse as domestic violence, where as European American women included verbal and emotional abuse in their definition as well. In regards to the legal system, NA/AI women stated that physical or extreme physical violence must occur before they would call the police and European American women only needed to be threatened before dialing authorities. Furthermore, American Indian women had higher ratings overall for the ATVS but only showed a significant differences for the Reactive Violence subscale. This indicating that NA/AI women believed psychical retaliation is an appropriate response to physical and verbal abuse.

NA/AI Risks Factors for Domestic Violence/Intimate Partner Violence

The risk factors associated with DV/IPV for NA/AI women are the same as those found in the general population - age, substance use, previous victimization, poverty, lower education attainment, unemployment and marital status; however, these shared causes seem to be more common in NA/AI populations (Aceirno, Resnick, Kilpatrick,

Saunders, & Best, 1999; Black, Heyman, & Slep, 2001; Kilpatrick & Acierno, 2003; O'Donnell, Smith, & Madision, 2002; Rennison, 2001; Sapra, Jubinski, Tanaka, & Gershon, 2014; Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001).

Age

When considering age, studies of the U.S. population show that younger women tend to have the highest prevalence of DV/IPV with the highest risk being for those between the ages of 16-24 (Rennison, 2001). Fairchild, Fairchild, and Stoner (1998) found similar results in a sample from a Navajo community where NA/AI women 40 years old or less were almost 6 times more likely to be the victim of DV/IPV compared to those women who were over the age of 40. In addition to age being significant in the prevalence of victimization, Kunitz, Levy, McCloskey, and Gabriel (1998) found that NA/AI women under the age of 50 were also more likely to be struck by their partner than women 50 years or older.

Substance Abuse

Although alcohol is a significant contributor to DV/IPV in non-Native populations, it is arguably the most widespread and critical health problem in NA/AI communities (Bachman, 1992; Kunitz & Levy, 2000; Wahab & Olsen, 2004). Alcohol abuse by both the perpetrator and the victim has been found to be a risk factor for DV/IPV within this population. Powers (1988) concluded that all acts of abuse on the Pine Ridge Reservation involved substance use with 77% related to alcohol and 23% related to drugs (Wahab & Olsen 2004). In a Southwestern NA/AI community 74

percent of DV/IPV cases involved either the perpetrator or the victim being under the influence of alcohol (Robin, et al, 1998; Sapra et al, 2014). In addition, Yuan, Koss, Polacca, and Goldman (2006) found alcohol dependency to be a significant cause of both physical and sexual assaults amongst women in six different tribes of the U.S. Furthermore, Norton and Manson (1995) found alcohol abuse to be associated with the most severe incidents of DV/IPV for NA/AI women seeking DV/IPV counseling in an Indian Health Center.

Previous Victimization

Adulthood physical and sexual assault, including DV/IPV, has also been associated with previous exposure to childhood physical and sexual abuse either directly by the victim or perpetrator or indirectly through the witnessing of parental/marital violence (Bohn, 2003; Hofeller & Hoefeller, 1982; Hotaling & Sugarman, 1986; Kuntiz, Levy, McCloskey, & Gabriel, 1998; Okun, 1986; Roodman & Clum, 2001; Urquiza & Goodlin-Jones, 1994; Walker, 1984; Yuan et al. 2006). In a multi-ethnic study, Urquiza and Goodlin-Jones (1994) found that nearly two-third of women who survived abuse as an adult had also been a victim of child abuse. As we have seen with previous risk factors, a larger number of NA/AI women and their partners have experienced prior abuse compared to other ethnic groups. In a group of 30 NA/AI women, Bohn (2003) found that all the women reporting abuse as child where also abused as adults. Looking specifically at DV/IPV for this same group, 14 out of 25 victims reported experiencing childhood abuse as well (Bohn, 2003). A study on a Navajo Reservation involving 352

men and women found childhood physical abuse to be a significant cause for not only being a victim of DV/IPV, but also being a perpetrator (Kunitz, Levy, McCloskey, & Gabriel, 1998). In addition, Yuan et al. (2006) found comparative results in regards to revictimization in a study of six tribes from the Northwest, Northern Plains, and Northeast United States. The authors found that multiple forms of child abuse as well as physical neglect increased the risk for NA/AI women to be assaulted later in life (Yuan et al., 2006). Finally, several studies propose witnessing abuse during childhood is often associated with abusive men, but not necessarily women in abusive relationships (Norton and Manson, 1995).

Socioeconomic Status (Poverty, Education, Employment, & Marital Status)

Socioeconomic factors that are associated with DV/IPV including poverty, unemployment, low education level, and marital status. As with other risk factors, we too see a significantly higher prevalence of these items in NA/AI communities. The NA/AI poverty rate is more than twice the national rate at 25.7% compared to 12.4% for the total population in conjunction with the highest unemployment rates and approximately $5,000 to $10,000 less per year earnings than all other populations (DeVoe & Darling, 2008; Ogunwole, 2006). In addition, NA/AI's complete high school at a lower percentage, 71%, than the national average of 80% (Ogunwole, 2006). When looking at marital status for NA/AI men and women, they are less likely to be married and more likely to be divorced (Ogunwole, 2006; Sapra et al., 2014). Existing studies in NA/AI populations supports this correlation between DV/IPV and low Socioeconomic Status

(SES). In a study among NA/AI women utilizing a WIC clinic, women living at or below 50% of the poverty level, on public assistance, and whose partner was not a high school graduate had a past year DV/IPV prevalence rate of 42.8% compared to just 10.1% for those women who utilized WIC's services but didn't fall under the above criteria (Malcoe, Duran, & Montgomery, 2004). Likewise, Fairfield et al. (1998) found that Navajo women whose household received government assistance were twice as likely to experience DV/IPV in the past year. In addition, a number of studies show that being separated, divorce, or cohabitating are strong predictors of DV/IPV for NA/AI women (Malcoe, et al, 2004; Norton and Manson, 1995; Yuan et al., 2014).

Cultural/Unique Risk Factors

In addition to these high levels of common risk factors among all women, NA/AI women also face unique causative factors for DV/IPV not faced by other ethnicities including colonization, loss of cultural affiliation, internalized oppression, and overall historical trauma (Allen, 1985; McEachern, Van Winkle, & Steiner, 1998; Poupart, 2003; Wahab & Olsen, 2004; Weaver, 2009). Colonization by European settlers has been listed as the main reason for DV/IPV in NA/AI communities (Burnette, & Cannon, 2014; Duran et al., 1998; Weaver, 2009). Colonization introduced a white patriarchal system causing gender and traditional roles of NA/AI men and women to be altered (Chester et al., 1994; Duran, Duran, Woodis, & Woodis, 1998; McEachern et al., 1998; Napholz, 1995; Roberts, Haper, Caldwell, & Decora, 2003; Weaver, 2009). Colonization, a form of violence itself, is "the displacement and undermining of societies, including their values,

cultures, beliefs, and ways of life by outside peoples" (Weaver, 2009, p. 1552). Prior to colonization roles of women and men were balanced and egalitarian and thought to act as a natural protective factor against acts of violence for NA/AI women (Braveheart-Jordan & DeBruyn, 1998; Daly, 1994; Jaimes-Guerrero, 2003; Smith, 2005; Weaver, 2009). Traditionally Native American women played an important role within their communities and held inherent social and familial power; therefore, violence against women wasn't tolerated. Due to these inherent powers and maternal clan connections, communities responded to acts of violence immediately and punishment ranged from removal of position or honors to exile of the abuser (Tehee & Esqued, 2008). The introduction of European legal systems and values impacted these traditional systems of Native Americans; status and honor were stripped from NA/AI men and European colonizers failed to acknowledge women as leaders causing NA/AI's to acclimatize to a European system of control over women (Duran, et al., 1998; Weaver, 2009). Thus, leaving NA/AI women without inherent powers and allowing domestic violence to become common (Tehee & Esqued, 2008).

Colonization, contact with non-natives, also caused a disruption in the transmission of cultural principles by the banning of traditional religious and spiritual practices and through the introduction of boarding schools (Chester, Robin, Koss, Lopez, & Goldman, 1994; Kluckhohn & Leighton, 1974; Locke, 1992; Zion & Zion, 1993). During the end of the nineteenth century the federal government began its boarding school program for Native Americans, typically ranging from ages 5-25 years old, as a

means to assimilate them into mainstream culture through education and with the purpose of erasing indigenous culture and history (Bloom, 2000; O'Donnell, 2012). NA/AI's were removed from their families and tribes and forced to attend these military type schools. This assimilation was an alternative approach to the violent removal on NA/AI set forth in a previous government policy. According to Bloom (2000) the thought was rather than get rid of entire tribes and communities, all could be merged into dominate culture by transforming their values and identities so that eventually NA/AI would not exist. NA/AIs were viewed as savages who needed to be civilized in order to be granted citizenship in a land that was theirs. Therefore, the use of indigenous languages and partaking in traditions were banned, and to aid in the process of assimilation removal of NA/AI clothing and cutting of the long hair was a must (O'Donnell, 2012; Burnette, 2015). Those NA/AI's who failed to adhere to the strict policies or attempted to escape were severely beaten and many children never returned home or died while in the governments care; outside of physical consequences, sexual and emotional abuse was widespread at boarding schools (Braveheart & DeBruyn, 1998; Duran et al., 1998; Evans- Campbell, 2008; Harper & Entrekin, 2006). This process lessened the knowledge of forbidden acts among NA/AI people as well as the traditional ways of dealing with such violation alluding to dysfunctional families and an obscured identity, allowing for victimization and violence to become common place in the lives of NA/AI men and women (Poupart, 2003; Rivers, 2005; Sapra, Jubinski, Tanaka, & Gershon, 2014).

This forced process into Western culture and shaming has led to internalized oppression which is another risk factor found in NA/AI communities. Internalized oppression refers to the way in which "NA/AIs have internalized Western discursive practices" and often view themselves in ways that mirror the thoughts of their oppressor– "subhuman, deficient, and vile" (Poupart, 2003, p. 87 & 88). As NA/AI internalized this message of the Western culture, they not only apply it to themselves causing self-hatred, but to all NA/AIs (Poupart, 2003). This hate is then taken out on family members, such as intimate partners, which can lead to increased rates of DV/IPV (Poupart, 2003).

Overall, the historical destruction and violence suffered at the hands of the U.S. government has led to historical trauma for NA/AI's. Historical trauma is "unresolved trauma and grief that continues to adversely affect the lives of survivors of such trauma" and whose affects are passed from one generation to another (Duran, et al., 1998, p.99; Jones, 2008; Oetzel & Duran, 2004). Therefore, it is easy to see the association between the high prevalence of interpersonal violence among NA/AI's and the continuing reverberations of historical acts (Hamby 2000; Sapra, Jubinski, Tanaka, & Gershon, 2014).

Health Outcomes/Consequences of DV/IPV: Depression

The correlation between DV/IPV and its effect on women's health has been well established in literature. Studies have found the outcomes of DV/IPV to be detrimental to a women's physical, sexual, reproductive, and mental health (Campbell, 2002; Golding, 1999; Mechanic, Weaver, & Resick, 2008; Nathanson, Shorey, Tirone,

Rhatigan, 2012). Laffaye, Kennedy, and Stein (2003) found survivors of DV/IPV more likely to report poor physical and mental health compared to women who had never experienced such violence. DV/IPV can leave women with bruising, scratches and cuts, broken bones, and/or internal injuries to their head, neck, chest, and/or abdomen (Campbell, 2002; Crowell & Burgess, 1996; Tjaden & Thoennes, 2000). These injuries can also lead to chronic pain, decreased cognitive abilities, seizures, and gastrointestinal issues to name a few (Campbell, 2002; Coker et al., 2002; Wong, Fong, Lai, & Tiwari, 2014). In regards to sexual and reproductive health, DV/IPV can cause unwanted pregnancies, miscarriages, sexually transmitted diseases, and premature labor and delivery (Campbell, 2002; Campbell, Garcia-Moreno, & Sharps, 2004; Carbone-Lopez et al., 2006; Tufts, Clements, & Wessell, 2010). Women who survivor DV/IPV are three times more likely to experience gynecological disorders such as vaginal bleeding, fibroids, and/or pain during intercourse (Campbell, 2002). In worst cases, DV/IPV can result in death with 40-60% of the murders of women in the U.S. being committed by current or ex-intimate partners (Campbell, 2002).

Although these outcomes are numerous, a majority of studies on DV/IPV focus on the mental health aspect of such incidents. Women who have experienced this type of violence have shown to have more mental health disparities (Hughes & Jones, 2000) and utilized mental health services more than those who have not been victimized (Barnwell et al., 2004). Research has consistently shown DV/IPV to be associated with depression, (PTSD), substance abuse, and suicide (Bryant-Davis, Chung, & Tillman, 2009; Devries et

al., 2013; Golding, 1999; Lacey et al., 2013; Mechanic et al., 2008; Pico-Alfonso et al., 2006; Scott-Tilley, Tilton, & Sandel, 2010). Therefore, the following subsection will discuss major findings for symptoms of depression as it relates to DV/IPV specifically for NA/AI women.

Depression

Depression has not only been listed as the primary mental health response to DV/IPV, but also the main reason victims seek health care (Campbell & Soeken, 1999; Gleason, 1993). Depression "is defined by a constellation of symptoms in a two week period and includes the presence of depressed mood and negative physical symptoms such as psychomotor retardation, sleep disturbances, appetite change," and "cognitive impairments such as a slowed thought process" (Campbell, Kub, & Rose, 1996, p 106). In a number of studies, including both clinical and community samples and a variety of instruments of measure, women who have experienced DV/IPV have consistently reported more depressive symptoms than non-battered women (Campbell & Soeken, 1999; Jordan, Campbell, Follingstad, 2010). According to Nathanson et al. (2012), 35-70% of all battered women have been diagnosed with depression verses just 12% for all women. For example, in a sample of 74 previously abused women residing in a community shelter Helfrich et al. (2008) found that approximately 52% of the women had suffered from major depression in the last year in contrast to the national average for all women of 2.4%. Similar results were found in a community sample of women in Washington State and Northern Idaho. Bonomi Thompson, Anderson, Reid, Carrell,

Dimer, and Rivara (2006) conducted telephone interviews with 3,249 women aged 18 to 64 and found that women with recent incidents of physical and/or sexual DV/IPV were 2.6 times more likely to report minor depressive symptoms and 4 times more likely to report symptoms of severe depression compared to all women in the study who had never experienced DV/IPV.

In a meta-analysis evaluating DV/IPV as a risk factor for mental health disorders, the mean prevalence for depression among victims of DV/IPV was 47.6% amid 18 studies (Golding, 1999). In addition, the literature reviewed showed that depression tended to decrease when the violence ended (Golding, 1999). More recently evidence of this association between DV/IPV and depression was found by Devries et al. (2013) in a systematic review of 16 longitudinal studies comprised of 36,163 participants. Out of the 13 studies utilized from this literature review that examined estimates of DV/IPV and incident depression and/or depressive symptoms, 12 studies reported a positive correlation with 11 of those studies showing a statistical significance (Devries et al., 2013).

Research has found all forms of DV/IPV, physical, sexual, and psychological/emotional abuse, and stalking, to be associated with depression (Dillion et al., 2013; Lacey, et al., 2103; Mechanic, Weaver, & Resnick, 2008; Pic-Alfonso et al., 2006). In examining the distinct categories of DV/IPV and related affects on depression, Pic-Alfonso et al. (2006) found psychological abuse to be just as harmful as physical abuse in regards to depressive symptoms in battered women. Women who also

experienced sexual abuse had higher depression scores than those who had not experienced sexual abuse (Pic-Alfonso et al., 2006). Furthermore, when controlling for physical abuse, sexual abuse and injuries, Mechanic, Weaver, and Resnick (2008) found that psychological abuse and stalking by a current or ex-intimate partner continued to show a correlation between DV/IPV and depression. Lacey and colleagues, supporting previous findings, contributed to this line of research by including women from different ethnic groups in their examination on the impact different types of violence has on depression (2013). Lastly, the frequency and severity of violence has also been shown to affect depression levels (Bonomi et al., 2006; Campbell et at., 1997).

Despite depression being the most commonly researched aspect of mental health associated with DV/IPV (Dillion, Hussain, Loxton, & Rahman, 2013) and the high rate of DV/IPV among NA/AI, very few studies have examined the consequences of IPV in indigenous populations including the exploration of the prevalence and sequelae of mental health effects such as depression among NA/AI survivors (Bohn, 2003; Burnette & Cannon, 2014; Duran, et al., 1998; Evans-Campbell et al., 2006; Saylors & Daliparthy, 2005). However, the findings from this dearth of research within this population are consistent with results found for the general population indicating that victimization is related to depression, PTSD, suicide attempts, and substance abuse (Evans-Campbell, et al., 2006). For example, Norton and Manson (1995) interviewed 16 NA/AI women requesting counseling for DV at an Indian health care center and found that all women felt more depressed since first experiencing DV/IPV. Moreover, in the study of 30

NA/AI women in their third trimester of pregnancy, Bohn (2003) using the Index of Spouse Abuse (Hudson & McIntosh, 1981) and the Danger Assessment (Campbell, 1986) examined the relationship of mental health among the effects of abuse. The study found that out of the 25 women who reported DV/IPV, 15 also reported history of depression with 60% of the women attributing their mental health issues to the abuse (Bohn, 2003). In a larger study using an urban sample of 112 NA/AI and Alaskan Native women, Evans-Campbell et al. (2006) found higher rates of depression among survivors of trauma compared to those in the study who had no history of violence using the Brief Symptoms Inventory. In a more recent study, Burnette and Cannon (2014) collected life stories regarding consequences of DV/IPV from 29 NA/AI of a Southeastern tribe in the Unites States. Although the qualitative study included perspectives of DV/IPV on children and families as well, women reported significant depression, PTSD and suicidal thoughts as a result of the abuse with symptoms lasting years and even decades after the violence concluded (Burnette & Cannon, 2014).

In conclusion, these findings for NA/AI women align with research in other populations; DV/IPV has been associated with mental health consequences, specifically depression, in a variety of clinical and community samples. However, since Native Americans in general have overall higher rates of mental health issues and prevalence of victimization than any other population, we could assume that DV/IPV only magnify this problem.

Means of Safeguarding: Physical Activity

Barriers to Common/Mainstream Approaches

Common/Mainstream approaches women employ to protect themselves from DV/IPV and the overwhelming impact exposure can cause to their health include counseling services, shelters and traditional health care centers (DeBruyn et al., 1990; Dziegielewski, Resnick, & Krause 1996), social support from family and friends, social services, clergy, police, and legal assistance (Bowker, 1983; Norton & Manson, 1995; Oetzel & Duran, 2004; Petretic-Jackson & Jackson, 1996; Waldrop & Resnick, 2004; Wahab & Olson, 2004). Although use of these familiar approaches yield positive outcomes, all too often these strategies are not available to or utilized by NA/AI women due to numerous barriers (Allaggia, Dylan, & Regehr, 2008; Crossland, Palmer, & Brooks, 2013; Hamby, 2008; Oetzel & Duran, 2004; Rivers, 2005; Wahab & Olsen, 2004).

In regards to lack of resources, many NA/AI reservations are isolated, rural areas with limited funding available for domestic violence programs and shelters, and where tribal authorities often lack the necessary resources and man power to handle DV/IPV incidences (DV in NA Communities, n.d.; Hamby, 2008; Hamby, 2000; Rivers, 2005). This struggle with protecting DV/IPV victims by Tribal governments and authorities is also due to unclear jurisdiction issues among the different levels of government and often leads to inadequate and delayed response to victims (Crossland, Palmer, & Brooks, 2013). For example, depending on the circumstances of the incident, whether the

assailant was NA/AI or not, and the nature of the assault dictates which level of government has jurisdiction. In addition, many NA/AI women, whether living on a reservation or off, fail to seek help due to racism, fear of losing custody of a child(ren), and/or lack of trust of non-Native people and systems. In a study comparing 20 NA/AI women and 20 European women, Tehee and Esquedo (2008) found NA/AI women were more likely to report that the legal system was unfair and did not work when addressing DV/IPV. Alaggia, Dylan, & Regehr (2008) found similar results specific to sexual violence as they interviewed eleven Aboriginal people, those indigenous to Australia, who had been victims of sexual violence and looked to analyze their encounters with the judicial system. Of the eleven young women, only one found her interaction with police positive, but only after multiple attempts to report abuse; the other ten participants in the study described police interaction as marked by disrespect, dismissal, and professional failure (Alaggia, Dylan, & Regehr, 2008). One victim in the study said she flagged police down and attempted to report an assault and was quickly accused of lying once the police discovered she had been drinking. There is also language barriers and beliefs and cultural differences pertaining to Western/mainstream approaches to intervention that can deter NA/AI women's willingness to access DV/IPV services (Hamby, 2008; Wahab & Olsen, 2004). Therefore, NA/AI women encounter systemic and cultural barriers to treatment, in addition to barriers that all victims of violence face (Crossland, Palmer, & Brooks, 2013; Hamby, 2008).

Physical Activity

One approach to safeguarding that potentially limits these barriers, that has been overlooked when examining this population is the role of physical activity and the potential effects on depression. Prior research has rendered positive outcomes related to mental health and regular participation in physical activity, but very little literature exists with survivors of DV/IPV (Gill, 2000; Concepcion, 2004). The few studies that have explored the relationship between physical activity and depression among survivors of DV/IPV have included a small sample size of NA/AI women or failed to include them at all in their respective studies (Bozeman, 2001; Concepcion & Ebbeck, 2005). However, no studies have specifically examined NA/AI women and the role that physical activity could have on their recovery.

Regular participation in physical activity, defined as any bodily movement produced by skeletal muscles that result in energy expenditure (Caspersen, Powell, & Christenson, 1985) has proven to produce mental health benefits such as reducing depression, stress, and anger while increasing self esteem (Brill & Cooper, 1993; Hays, 1999; Morgan & Goldston, 1987; Scully, Kremer, Meade, Graham, & Dudgeon, 1998; Sonstroem, Harlow, & Josephs, 1994). This connection between physical activity and mental health is well documented in literature with the National Institute of Mental Health (NIMH) identifying the psychological benefits of regular participation as far back as the early 1900s (as citied in Bozeman, 2001). Furthermore, exercise, a type of physical activity that is planned or structured (National Institutes of Health, 2016), has

shown to be a commonly prescribed treatment for depression, with roughly 2,000 primary-care physicians reporting they prescribed exercise for their patients in a 1983 survey conducted by Morgan and Goldstone.

The relationship between physical activity and depression was first examined in 1905 by Franz and Hamilton. In their study using two males with depression, the authors evaluated a number of variables in response to exercise and mechanical vibrations. The variables included pressure and pain threshold, rapidity and accuracy of movement, speed of reading, and reaction times, while the exercise consisted of a two hour walk or bowling (Franz & Hamilton, 1905). The results from the series of studies were split, showing positive results on depression for one subject and fatigue in another. The study's findings led the authors to recommend the use of exercise in the treatment of depression on a case-by-case basis. Despite this early work and recommendation, William Morgan is credited with pioneering much of this area of research with his late 1960's findings when he reported that psychiatric patients with depression, both male and female, had lower fitness levels in comparison to non-hospitalized control groups (as cited in Biddle, Fox, & Boutcher, 2000; Biddle & Mutrie, 2001). These findings are believed to have led to the research of incorporating physical activity as part of a treatment plan for patients with depression (Biddle, Fox, & Boutcher, 2000; Biddle & Mutrie, 2001).

Since then there has been an overabundance of studies carried out that support these early findings that physical activity, exercise, is associated with an improvement in

clinically and self assessed symptoms of depression in various populations. For example, Doyne, Chambless, and Beutler (1983) used a multiple baseline design to examine the effectiveness of aerobic exercise in four women with major depression. The exercise consisted of 4, 30 minute sessions of bicycle ergometer interval training for 6 weeks and was compared to an attention placebo baseline treatment (Doyne, Chambless, & Beutler, 1983). The results concluded that depression levels were significantly decreased with physical activity in comparison to the control condition up assessment 3 months later (Doyne, Chambless, & Beutler, 1983).

Conducting a meta-analysis, North, McCullagh, and Tran (1990) used 80 studies that generated 290 effect sizes (ESs) to examine the exercise-depression relationship; the results showed an overall ES of -0.53, signifying that exercise decreased depression scores roughly one half a standard deviations more than the comparison groups. The meta-analysis included literature that examined a variety of exercise forms, subject samples, exercise lengths, and various numbers of exercise sessions. Looking specifically at the subject samples, the authors reported that exercise significantly reduced depression amongst all age groups in the literature ranging from 11 to 55 years of age, exercise was equally effective for females and males, and exercise decreased depression in all populations – hemodialysis patients, schizophrenic, post myocardial infarction, the depressed, athletes, alcohol and drug addicts, and healthy subjects (North, McCullagh, & Tran, 1990).

Building on these findings, Craft and Landers (1998) performed a meta-analysis that include only studies where subjects had been diagnosed with clinical depression or depression caused from a mental illness. The meta-analysis included 30 studies yielding 119 ESs with an even larger overall mean ES of -0.72 (Craft & Landers, 1998). Related to North et al. (1990) results, some of the key findings from this study included (a) all exercises types, anaerobic and, and were maintained at the follow aerobic, reduced depression scores, (b) exercise was equally beneficial compared to other traditional forms of intervention, and (c) exercise programs lasting 9 weeks or longer showed the largest decrease in depression (Craft & Landers, 1998).

Lawlor and Hopker (2001) conducted a more recent meta-analysis that incorporated only patients with clinical depression in randomized control trials. The 14 studies used in the meta-analysis included research from the United States, United Kingdom, Canada, and Norway (Lawlor & Hopker, 2001). Results showed an overall mean ES of -1.1 for exercise when compared to no treatment, supporting previous findings that exercise is significantly more effective; exercise was reported to be as effective as cognitive therapy with a mean difference of -0.3 (Lawlor & Hopker, 2001).

Lastly, research also suggests the effects of physical activity may be long lasting. DiLorenzo et al. (1999) studied 111 nonclinical women and men with elevated BDI scores to examine the short and long term effects of exercise. Participants were randomly assigned to either one of two stationary bicycling programs or await-list control group. Compared to the control group, greater significant improvements in anxiety, depression,

and self concept/esteem were measured at the conclusion of the 12 week exercise programs. Also, many of these improvements were maintained by participants at the 12 month follow up (DiLorenzo et al., 1999). Supporting these findings, Babyak et al. (2000) found similar results in a follow up assessment of 156 patients with major depression 6 months after completing a 4 month exercise program. Results from the follow up found, as compared to a group utilizing anti-depressant medication setraline and a combination group, those in the exercise group with previous clinical diagnoses of major depression had lower rates of depression and those in the exercise and combination group, exercise and medication, were more likely to be in partial and full recovery states verses the medication group (Babyak et al., 2000).

Not only have studies consistently shown a clear relationship between physical activity and mental health/depression, a number of studies have found physical activity to be as effective against depression as commonly used treatment options such as psychotherapy, group therapy, cognitive therapy, and antidepressant medications (Bluementhal et al., 1999; Freemont & Craighead, 1987; Greist, Klein, Eischesn, Faris, Gurman, & Morgan, 1979; Klein, Gurman, Neimeyer, Lesser, Bushnell, & Smith, 1985; Morgan, 1997). Greist et al. (1979) compared running with two forms of psychotherapy, time limited and unlimited time sessions, in the treatment of depression among 28 patients over a 10 week span. Results showed significant anti-depressant effects in all groups with no difference among the three groups. Despite there being some methodological limitations, such as small sample size and inexperienced psychotherapist,

the study's findings suggest that running is as effective as the two types of psychotherapy (Greist et al., 1979).

A replication of this study conducted by Klein et al. in 1985 showed consistent findings when comparing the anti-depressant effects of running, mediation-relaxation (yoga), and group psychotherapy over the length of 12 weeks. The 74 subjects diagnosed with depression were randomly assigned to one of the three groups; those in the running group attended two 45 minute sessions per week following the previous studies format, while the meditation-relaxation and group physiotherapy met once a week for two hour group sessions (Klein, et al., 1985). Post-test scores showed a significant decrease in depression in all 3 groups with no differences being observable between the groups. These benefits of physical activity were still evident at the 9 months follow up and were shown to be better for the running and mediation-relaxation groups.

In comparing the effectiveness of physical activity on depression with standard medication, Blumenthal et al. (1999), randomly assigned 156 men and women suffering from clinical depression to a medication, exercise, or to a combined exercise and medication group. The 48 participants in the medication group were administered Sertraline, and met with a psychiatrist prior to the study and at weeks 2, 4, 6, 10, 14, and 16 to assess the effectiveness of the medication and possible side effects (Blumenthal et al., 1999). The 53 individuals who were in the exercise group walked or jogged on a treadmill for 30 minutes 3 times a week for 16 week, while a third group took the medication and participated in the exercise as described (Blumenthal et al., 1999).

Despite the medication initially working faster, results showed that all 3 groups displayed a significant decrease in depressive scores on the Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HAM-D), as well as a significant decrease in the number of individuals meeting the criteria for clinical depression according to the *Diagnostic and Statistical Manual of Mental Disorders-4th Edition (DSM-IV)* at week 16 (Blumenthal et al., 1999). Dimeo, Bauer, Varahram et al. (2001) argue that physical exercise has an advantage over the use of antidepressant medication due to the latency of some drugs before effects are felt due to the significant improvement in depressive symptoms in a small amount of time.

Physical activity has shown favorable results when used in combination with traditional forms of treatment as well. Fremont and Craighead (1987) evaluated both the separate and combined effects of exercise and traditional treatment options of depression in 49 participants with elevated BDI scores. The authors randomly assigned individuals to aerobic therapy consisting of running and walking, cognitive therapy, or a combination of the two. The running group exercised for 20 minutes, three times a week, those in the cognitive therapy group met with a licensed therapist once a week for a one hour session, while the participants in the combined group did both all for a total of 10 weeks (Fremont & Craighead, 1987). Measurements were taken before, during, and at follow-up assessments of 2 and 4 months; results showed significantly reduced BDI scores for all groups at the duration of the 10 weeks, but no significant differences between the groups

(Fremont & Craighead, 1987). These positive effects were still present at the two and four month follow ups (Fremont & Craighead, 1987).

Rueter, Mutrie and Harris (1982) found similar results when examining high BDI scores in 18 participants randomly assigned to a counseling group or a combination group of running and counseling (as cited in Morgan, 1997). Those in the counseling group attended one session per week and the combination group, in addition to the weekly counseling sessions, participated in 20 minutes of running three times a week. Results showed significant reduction in depression for the participants in the running and counseling group but no significant reduction for the counseling only group (as cited in Morgan, 1997; as cited in Martinsen, 1990). Furthermore, the decrease in depression for the combination group was significantly larger compared to the counseling only group (Martinsen, 1990). Lastly, in studies conducted by Martinsen and Medus (1989) and Martinsen et al. (1989c) patients found the physical fitness aspect of their treatment plans to be most important compared to other forms of therapy.

Attempting to further clarify this relationship between physical activity and depression, a number of studies have compared the effects of different types, intensities, frequencies, and durations of physical activity associated with improvements in depression. According to Leith (2010) research has reported significant decreases in depression associated with participation in running, walking, dance, cycling, weight training, karate, racquetball, jumping rope, and yoga. In addition, physical activity has shown to be effective at reducing levels of depression regardless of exercise duration,

frequency, and length. Studies have recorded benefits of exercise on depression at durations of 20 to 120 minutes, for frequencies anywhere from 2 to 5 times per week, among programs ranging from 3 weeks to 4 years (Leith, 2010).

Looking specifically at women, Doyne, Ossip-Klien, Bowman, Osborn, McDougall-Wilson, and Neimayer in 1987, compared the anti-depressive effects of running verses weight lifting. The 40 clinically depressed women were randomly assigned to a running, weight lifting, or wait-list control group. All participants were required to attend four sessions per week for 8 week; individuals in the running group walked or ran around an indoor track, while the weight lifting participants did a 10 station program on a Universal Exercise Machine (Doyne et al., 1987). Depression levels were assessed using the BDI and HAM-D pre, mid, and post treatment as well as at 1, 7, and 12 month follow ups (Doyne et al., 1987). This study found that both types of exercises significantly improved depression levels, clinically and statistically, compared to the wait-list control group, and that the two groups were not significantly different (Doyne et al., 1987). The reduction in depression was still observable at one, seven, and even 12 month follow-ups.

Study results have even shown a short, single bout of exercise to have a positive effect on depression (Dimeo, Bauer, Varahram, Protest, & Halter, 2001). In a study involving 12 patients diagnosed with major depression, Dimeo et al. (2001) implemented a daily interval treadmill walking program for 30 minutes a day for 10 consecutive days with the exception of Sunday's in order to study the short term affects of physical

activity. Depression levels for participants were measured before and after the program using the Hamilton Rating Scale for Depression; measurements at the conclusion of the study showed a decrease in depression scores for 8 of the participants and no change in severity of depression in the remaining four (Dimeo et al., 2001). These results point toward the ability of physical activity to effectively reduce depressive symptoms in a short time.

Nelson and Morgan (1994) used 12 female college students, 6 depressed and 6 non-depressed, to examining the influences of acute exercise on depression. The two group's levels of depression were assessed using the BDI and Profile of Moods States Scale (POMS) before, 0-5 minutes after, and 15-20 minutes after exercising on a bicycle ergometer at various intensities on three different days (Nelson & Morgan, 1994). The exercise intensities, 40%, 60%, and 80% of participants estimated heart rate, were counterbalanced and randomly chosen. Results showed all intensities to be equally effective with significant improvements in depression being recorded following exercise at all three intensities (Nelson & Morgan, 1994). It should be noted that there were no changes for the non-depressed group.

Although the connection between the two variables is well documented and the most common response to DV/IPV has been listed as depression, the research in this area is scarce. A search of the literature by means of the search engines Google Scholar, Academic Search Premiere, and the Oklahoma State University Library's Big Orange Search System (BOSS) using various combinations of key words pertaining to the

subject such as exercise therapy, physical activity, domestic violence, Native Americans, Indians, American Indians, Native American women, depression, intervention, coping mechanisms or strategies, battered women, trauma, intimate partner violence, and/or violence against women, revealed only two studies that explore the relationship of physical activity and depression among survivors of DV/IPV. Bozeman in 2001 was the first to examine this relationship when she compared physical activity, self-esteem, and depression levels between sheltered battered women, non-sheltered battered women, and non-battered women. The 150 participants in the study, only 4.7% being NA/AI, were dispersed evenly among the three groups and administered three questionnaires, one for each of the category, in order to measure their self-reported physical activity, self esteem, and depression levels (Bozeman, 2001). A Multivariate Analysis of Variance (MANOVA) was then conducted to evaluate the data for differences among the three groups. The author found an overall positive correlation when examining physical activity and self esteem levels, and negative correlations between physical activity and depression levels and self esteem and depression levels for all three groups with significant correlations for sheltered and non-sheltered battered women (Bozeman, 2001).

The second study conducted by Concepcion and Ebbeck in 2005, implemented a physical activity program into the lives of survivors who had recently left their abusers in order to evaluated how participation in physical activity might affect the way they felt and viewed themselves. Participants were recruited from transitional houses, support groups, mental health agencies, and a university counseling center in the local area; the

participants, none NA/AI, consisted of six Caucasians and one African American (Concepcion & Ebbeck, 2005). The women were offered gym membership for a period of three months; data collection regarding history of abuse, physical activity levels, preferred activity choices, self views, and general feelings such as self-reported depression was collected during a series of one to four interviews conducted every month (Concepcion & Ebbeck, 2005). In addition, record of attendance and frequency of participation was kept through the gym's electronic check-in system and through self-reporting. The survivors in the study reported that participation in exercise gave them a sense of achievement, made them feel 'normal,' provided a sense of healing and freedom, offered hope for the future, and, relative to depression, improved their mental and emotional states (Concepcion & Ebbeck, 2005, p.203).

Lastly, physical activity has shown to be effective in two very similar populations further supporting its use with DV/IPV survivors. Although Madden was not looking specifically at the physical activity-depression relationship or victimization, his 1990 study on the outcome of control and vulnerability after being enrolled in a semester long college karate course was the first to shed light on the possible benefits of physical activity for victims of violence. Using a 10-point scale, the 41 male and female subjects rated their health, physical fitness level, perceived control, vulnerability in regards to safety, chance of being attacked and injured, and ability to resist an attacker, sexual assault, and assault with a weapon (Madden, 1990). In addition, participants completed a depression scale and rank-ordered their grounds for taking the karate course. At the

conclusion, participants reported they felt they had made improvements in physical conditioning, were less depressed, and more in control and less vulnerable in regards to being attacked and being injured during an attack (Madden, 1990). Most interesting about this study is that over half of the subjects had previously been physically assaulted, and they that had been victimized were less depressed at the conclusion of the karate course than those who had not been attacked previously (Madden, 1990).

In addition, physical activity has been shown to significantly reduce depression in alcoholics (Pamler, Palmer, Michiels, & Thigpen, 1995; Palmer, Vacc, and Epstein, 1988). Palmer, Vacc, and Epstein (1988) implemented a 3 days per week exercise program of walking and jogging for a group of inpatient alcoholics at a 28-day treatment program. Significant reduction in depression scores were observed in the treatment group following the 28 days of physical activity compared to the control group. The use of physical activity could prove, not only beneficial in safeguarding against DV/IPV but, to be useful in preventing it from re-occurring since a major contributor to DV/IPV in NA/AI communities is alcoholism (Bachman, 1992; Kunitz & Levy, 2000; Powers, 1998; Robin, et al., 1998; Sapra et al., 2014; Wahab & Olsen, 2004).

Theoretical Framework

Social Learning Theory

Social Learning Theory explains behaviors of humans in terms of "reciprocal interactions between cognitive (person factors), behavioral, and environmental determinants" (Bandura, 1977, p *vii*). The theory assists in the understanding of domestic

violence and the cycle of abuse leading to the intergenerational context of violence (Kalmuss, 1984) as seen in NA/AI communities (Bohn, 2003; Hofeller & Hofeller, 1982; Hotaling & Sugarman, 1986; Kuntiz, Levy, McCloskey, & Gabriel, 1998; Okun, 1986; Roodman & Clum, 2001; Urquiza & Goodlin-Jones, 1994; Walker, 1984; Yuan et al. 2006). The Social Learning Theory of Albert Bandura posits that learning occurs through observing others behaviors, attitudes, and emotional responses and then modeling those behaviors (Culatta, 2011). Through modeling, and individual forms ideas on the performance of new behaviors by observing others and later on this coded information is used as a guide for action (Bandura, 1977). In the Social Learning Theory observational learning is comprised of four interrelated component processes': attentional, retention, motor reproduction, and motivational processes (Bandura, 1977) as seen in Figure 1.

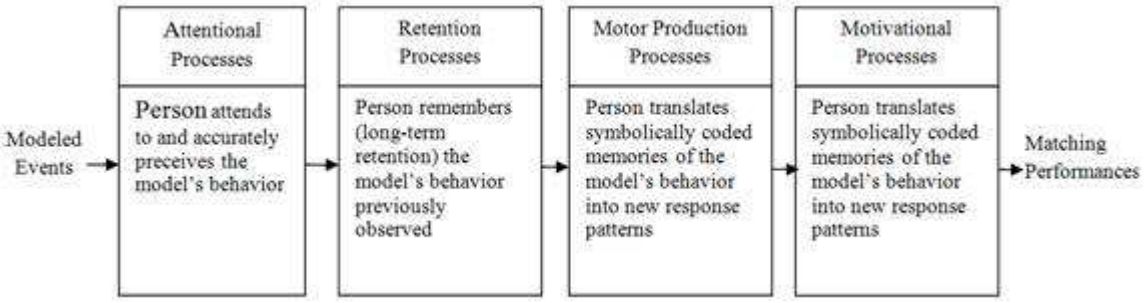

Figure 1: Component Processes Governing Observational Learning.

Source: Harinie, Sudiro, Rahayu, & Fatchan, 2017).

In the first stage, the attentional processes, in order for a behavior to be successfully modeled, individuals must pay attention to the observed behavior and perceive it correctly. The individual does not just look at the model and what is being

done, but instead this is a selective process that involves the observer's characteristics, features of the modeled behavior itself, and human interactions that ultimately determine what will be observed (Bandura, 1977). There are various determinants in this processes that affect modeling. Associational patterns, or who one interacts with on a regularly basis will limit the types of behavior observed and therefore learned (Bandura, 1977). The functional value attached to the behavior or the model is important as well. Hence, models that demand attention or have appealing qualities will be sought out, while other less appealing models will be ignored or discarded (Bandura, 1977). The importance and complexity of the modeled behavior plays a role in what will be learned too (Bandura, 1977). The second process is retention, where individuals must remember or retain what was observed in order to model the behavior. In order for an individual to benefit from the model's behavior when no longer present, the patterns of response should be stored in memory in symbols or codes (Bandura, 1977). This allows the modeled experience to become permanent memory. The observational learning in this stage is dependent on two systems of representation: imaginal coding and verbal coding (Bandura, 1977). This transformation of the modeled activity into images and verbal symbols makes them easy to use, and these codes will then serve as a guide for performance (Bandura, 1977). The third stage is where the symbols or codes are transformed into appropriate actions. Behavioral reproduction is affected by both an individual's cognitive development and motor skill ability (Bandura, 1977). Individuals who have the essential elements, cognitive development and motor skill ability, of the

observed behavior will easily produce the new patterns, and when the essential elements are lacking reproduction of the observed behaviors will be flawed (Bandura, 1977). Since most codes, the images and verbal symbols are not reproduced correctly the first time, accurate displays of the observed behavior occur through modeling the new behavior, practice, and refinement of performance(s) based on informative feedback (Bandura, 1977). The final component, the motivational processes, determines the success of the learning process and includes various types of reinforcement. If an individual models an observed behavior and the consequences are rewarding, the individual is motivated to repeat and adopt the behavior (Bandura, 1977). However, if the observed and modeled behaviors lead to unrewarding results and/or punishment, the individual will be discouraged from repeating the behavior (Bandura, 1977).

The principles of the Social Learning Theory have been applied extensively in the understanding of aggression and violent behaviors, particularly in the modification of behavior and control of aggression (Bandura, 1969; Bandura, 1973; Culatta, 2001; Foshee, Bauman, & Linder, 1999). Research on DV/IPV support the idea that children model the observed behaviors and response patterns of parents and extramarital family members (Halford, Sanders, & Behrens, 2000; Hines & Saudino, 2002; Howell & Pugliesi, 1988; Kalmuss, 1984; Skuja & Halford, 2004; Tedeschi & Folson, 1994). In regards to DV/IPV, "children who observe parents use of violence observe an entire script for that behavior" due to observing the behavior, triggers for the violence, circumstances surrounding the violence, and the results associated with the violence

(Foshee, Bauman, & Linder, 1999, p. 332) and, therefore, are likely to become a perpetrator or victim of violence themselves (Cannon, Bonomi, Anderson, & Rivara, 2009). The Social Learning Theory implies that aggression is learned by observation of such behavior and the positive outcomes associated with these acts of aggression (Bandura 1977; Foshee, Bauman, & Linder, 1999). In general, it's thought that violence results in negative consequences, however, the use of violence as a means of coercion may result in children forming positive expectations for the use of violence (Anderson & Kras, 2005; Foshee, Bauman, & Linder, 1999). For example, a child who observes his/her father use violence towards his/her mother in response to a stressful situation/conflict and then sees the father achieve his desired outcome because of the use of violence, allows the child to observe many functionally positive consequences for violence and form positive expectations for modeling such behavior (Anderson & Kras, 2005; Bandura, 1973; Foshee, Bauman, & Linder, 1999). In addition, children not only learn behaviors and how to used those behaviors to achieve desired outcomes, but they also learn emotional triggers for violent behaviors (Anderson & Kraus, 2005). For example, if a child observes his/her father use violence towards his/her mother because she arrives home late from work, the social learning theory suggests the child may code his/her father's response as being provoked, or triggered, by the mother being late. The continual exposure to violence over the course of time and the observation of compliance and submission by the abused reinforces the normalcy of violence and the use of violence to achieve desired effects (Anderson & Kras, 2005). As a result, aggression and DV/IPV

is a learned behavior and becomes a recurring cycle though modeling leading to intergenerational transmission of DV/IPV (Anderson & Kras, 2005; Bandura, 1973; Cannon, et. al., 2009; Foshee, Bauman, & Linder, 1999) as seen in NA/AI populations (Bohn, 2003; Glies-Sims, 1983; Hofeller, 1982; Hotaling & Sugarman, 1986; Kuntiz, Levy, McCloskey, & Gabriel, 1998; Okun, 1986; Roodman & Clum, 2001; Russell, 1990; Urquiza & Goodlin-Jones, 1994; Walker, 1984; Yuan et al. 2006). Victims of DV/IPV learn how to function and interact through the use of violence, as the "social learning theory even predicts that they too will later become the perpetrator to avoid being revictimized" (Anderson & Kras, 2005, p. 109), and their children will learn as well if the cycle is not broken. Since, constructive strategies of conflict resolution tend to be absent from these aggressive incidents (Foshee, Bauman, & Linder, 1999), it is imperative to teach survivors of DV/IPV appropriate approaches to safeguarding against, and effective coping skills to deal with, the trauma of DV/IPV so that a healthy living environment for all survivors can be established (Bauman, Foshee, & Linder, 1999; Horvath, Misra, Epner, & Cooper, 2016; Saylors & Daliparthy, 2005).

Since social learning is listed as the most common way of learning, the theory has significant implications for recovery efforts (Horvath, Misra, Epner, & Cooper, 2016) and resocialization (Anderson & Kras, 2005). In working with NA/AI survivors of DV/IPV, application of the Social Learning Theory's principles can allow for survivors to observe appropriate models and learn new behaviors to safeguard against the effects of DV/IPV. When applying the Social Learning Theory to the current study, the program

leader or fitness instructor and/or the NA/AI healer or practitioner becomes the new model of behavior for survivors; the decrease in depression associated with this new behavior serves as the motivation to adopt the model as a positive coping mechanism for the effects of DV/IPV. Other reinforcements for adopting the coded information of physical activity for depression in this population include social support and increased self-esteem, and cultural identity and refinement especially for participation in cultural/traditional forms of physical activity for NA/AIs (Duran, Duran, & Brave Heart, 1998). Supporting the utilization of the Social Learning Theory and cultural/traditional forms of NA/AI physical activity, Saylors and Daliparthy (2005) stated that "by invoking cultural buffers to the trauma and stress that NAs face, it is possible to teach and support each other," (p. 279) and overcome historical and present victimization, and recover the spirit. Physical activity and its potential to decrease depression levels in survivors on DV/IPV could help minimize the effects of DV/IPV and assist with the resocialization of victims into not accepting violence by allowing survivors to model healthy functioning (Anderson & Kras, 2005).

Hybrid Therapy: The Community Model

Previous research focusing on incorporating NA/AI cultural and traditional healing practices with mainstream approaches in order to draw on the strength of traditional NA/AI healing practices, such as medicine men, talking circles, and sweat lodges, have proven beneficial in the treatment of victimization within this population

(Bien, 2005; Nebelkopf & Penagos, 2005; Saylors & Daliparthy, 2005; Williams, 2005; Villanueva, 2003). This bi-cultural approach was coined Hybrid Therapy or Community Clinical Model by E. Duran, B. Duran, W. Woodis, and P. Woodis in 1998, and is where non-Native and NA/AI practitioners work in conjunction with traditional NA/AI healers, medicine men, and/or tribal programs. This theory allows for "acknowledgement of historical roots of trauma, the use of culturally appropriate sanction to DV/IPV, and individuals to redefine themselves in culturally appropriate ways" (Oetzel & Duran, 2004, pg 57). The use of physical activity as a coping mechanism for NA/AI survivors of DV/IPV aligns with this theory due to the extremely important role and way in which physical activity, much in the form of games and sports, permeated all phases of tribal life long before colonization and assimilation (Oxendine; 1988).

Historically participation in physical activity was in alignment with NA/AI traditions, rituals, and ceremonies and related to the social issues at hand, most commonly death, sickness, climatic control, fertility, and settling of disputes (Oxendine, 1988). Therefore, depending on the community need and/or the time of year the activity being engaged in varied as well as importance. For example, the most frequent form of physical activity connected with healing was the sport of stickball (modern day lacrosse); healing sports were used both for preventative and curative purposes alike (Oxendine, 1988). Regardless of the reasoning for the ceremony, the medicine man was involved. Similar to the Hybrid Therapy approach, in the healing games the medicine man was the one who prescribed all the activities (Oxendine, 1988). For the purpose of this study, the

term cultural/traditional physical activity(ies) will refer to activities that have been a way of life for Native Americans, such as games, sports, running, dancing, art, and are often related to religious and ceremonial traditions that have gone on for centuries ("Games, American Indian," n.d; Oxendine, 1988; McAvoy, Shirilla, & Flood, 2004).

Duran and Duran (1995) stated that mainstream or Western models of therapy do not work with NA/AI due to the conflicting beliefs systems of the two cultures, and the hegemonic and Eurocentric undertones of the models that further oppress and are not sufficient to heal NA/AIs (Duran & Duran 1995; Duran, Duran, & Braveheart, 1998). The basis of thought for the Hybrid Therapy Model is in the addressing of intergenerational trauma or historical trauma caused by colonization that has resulted in a number of issues faced by NA/AIs, including DV/IPV, and the disturbance colonization caused to the traditional NA/AI structures and systems of identity, sociocultural reproduction, and control (Duran, Duran, & Braveheart, 1998). Historical or intergenerational trauma refers to a cumulative, incomplete mourning of exposure to traumatic events that is passed from one generation to the next and impacts that group of people's health and well being (Duran, Duran, & Braveheart, 1998; Duran & Duran, 1995). In the case of NA/AI's this traumatic event was/is colonization and cultural genocide that include things such as the forced removal from sacred lands, forced placement of NA/AI children in boarding homes, and prohibition of traditional practices and use of tribal language and is often referred to as a 'soul wound' (Duran, Duran, & Braveheart, 1998; Duran & Duran, 1995). The Hybrid Therapy Model proposes that a

survivor of DV/IPV must understand the historical violence of NA/AIs at the hand of the European settler in order to effectively deal with the family violence that has been experienced (Duran & Duran, 1995). The model includes four steps: (1) a referral is made or the victim contacts a service provider, whether it be a traditional healer or non-Native provider, for DV/IPV; (2) an assessment is conducted on the survivor's mental health which includes depression levels, acculturation levels, spiritual level, and overall health; (3) implementation of mainstream forms of therapy and /traditional activities based on survivors desires and needs; (4) survivor is evaluation and recommendation for ongoing activities, mainstream and/or traditional, are made. However, unlike mainstream approaches, there is no termination of cultural/traditional activities (Duran & Duran, 1991; Duran, Duran, & Braveheart, 1998).

The most important component to the model is the use of cultural/traditional activities as it allows for education, reconnection, and understanding of the traditional NA/AI belief systems and traditional perspectives leading to improved self esteem, sense of identity, and healing of internalized oppression (Duran, Duran, & Brave Heart, 1998). It is not enough that the cultural/traditional component be implemented, but it must be the core of the program. In addition, non-Native and NA/AI healers must both have an mutual respect in the healing abilities of the two forms of practice, and it is best that the NA/AI healers practice traditionalism in order that the intervention not be offensive (Duran, Duran, & Braveheart, 1998; Duran & Duran, 1995). Lastly, the model typically

includes the entire family due to the importance of community and family systems within NA/AI culture (Duran & Duran, 1995; Duran, Duran, & Braveheart, 1998).

The "Indigenist" Stress-Coping Model

The "Indigenist" Stress-Coping Model supports the Hybrid Therapy approach. The "Indigenist" model is based on a NA/AI viewpoint that acknowledges colonization and promotes NA/AI empowerment and sovereignty (Walters & Simoni, 2002). In the article "*Reconceptualizing Native Women's Health: An "Indigenist" Stress-Coping Model,* Walters and Simoni (2002) looked specifically at the application of the model on the health of NA/AI women based on the thought that colonizers main target were NA/AI women due to tribes operating in a traditional matriarch system.

The model, as seen in Figure 2, asserts that cultural activities serve as a moderator between stressors and health by operating as a buffer, strengthening emotional and psychological health, and mitigating the negative outcomes caused by stressors (Walters & Simoni, 2002; Walters, Simoni, & Campbell, 2002). This model is easily applicable to the proposed study on survivors of NA/AI women and the role that physical activity may have on levels of depression. Following the pathways in Figure 2, traditional health practices are listed as an efficient way to cope with the health outcome of depression due to the stress of physical and sexual violence (Walters & Simoni, 2002). The model builds on the work of Dinges and Joos (1988) and Krieger (1999). Dinges and Joos (1988) examined the interaction of stress, coping, and health among NA/AIs in an attempt to

provide guidance for future studies. The authors further developed a stress and coping model to include stressful life events, and identified environmental circumstances and person factors, individual variability in reactions to stress, as causes to these stressful events (Dinges & Joos, 1988). In the model, health outcomes, positive, negative, or neutral, were dependent on the interactions between internal and external mediators and stress state (Dinges & Joos, 1988). Dinges and Joos (1988) concluded that this model was best for describing the relationships between stress, coping, and health in NA/AIs.

Krieger (1999) applied an ecosocial framework to examine the relationship amongst discrimination, inequality, and health outcomes. Krieger (1999) viewed three approaches of discrimination - indirectly by comparing subordinate to dominate groups, directly through self reported measures, and at the institutional level such as residential segregation, while emphasizing the importance of utilizing identity processes and self expression as moderators. Walters and Simoni's (2002) "Indigenist" Stress Coping Model, in lieu of the ecosocial framework, describes the pathways connecting social experiences and health, which allows for the integration of "social, psychological, and cultural reasoning about discrimination and other forms of trauma as determinants of health" (p. 521).

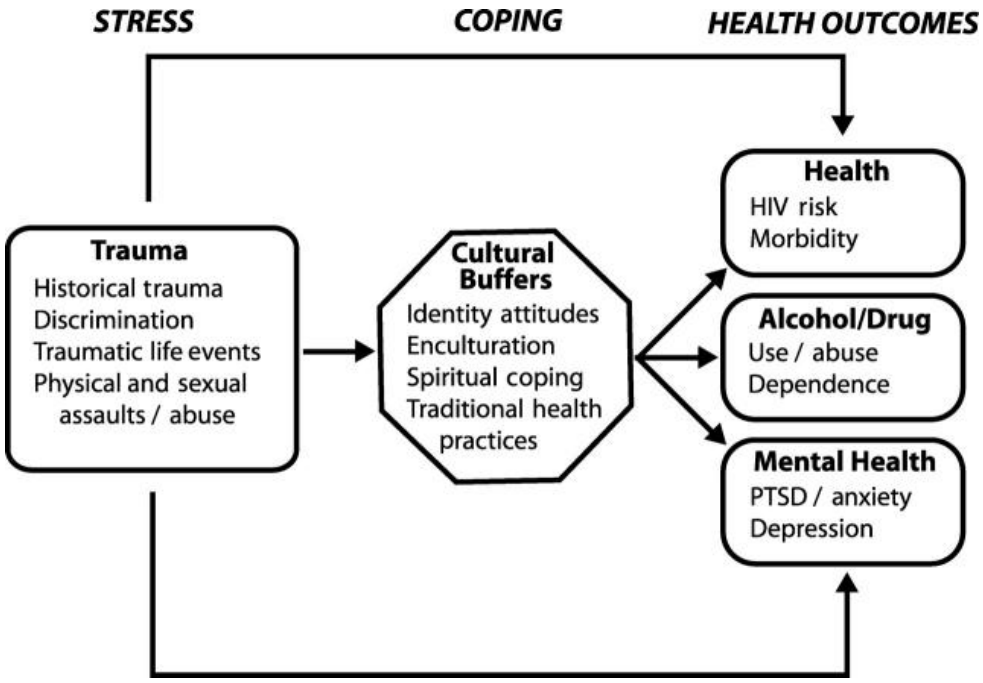

Figure 2: Indigenist Model of trauma, coping, and health outcomes for American Indians. Source: Walters & Simoni, 2002.

Instruments for Measurement

Beck Depression Inventory-II (BDI-II)

The Beck Depression Inventory-II (BDI-II) was used in the current study to assess the participant's level of depression. The BDI-II developed by Beck, Steer, and Brown (1996) is a revised version of the original BDI and BDI-IA. The BDI is one of the most widely used instruments for measuring the prevalence and severity of depressive symptoms across a broad spectrum of populations (Archer, Maruish, Imhof, & Piotrowski, 1991; Beck, Steer, & Carbin, 1988; Beck, Steer, Ball, & Ranieri, 1996; Campbell, Belknap, & Templin, 1997; Piotrowski & Keller, 1989; Piotrowski, Sherry, &

Keller, 1985; Steer & Clark, 1997). The BDI was created by observing attitudes and symptoms in patients who had been clinically diagnosed with depression; the symptoms and attitudes that seemed specific to these patients and aligned with the depiction of depression in psychiatric literature was then used to construct the 21 categories in the inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The 21 categories or symptoms include: Mood; Pessimism; Sense of Failure; Lack of Satisfaction; Guilty Feeling; Sense of Punishment; Self-Hate; Self Accusations; Self Punitive Wishes; Crying Spells; Irritability; Social Withdrawal; Indecisiveness; Body Image; Work Inhibition; Sleep Disturbance; Fatigability; Loss of Appetite; Weight Loss; Somatic Pre-Occupation; and Loss of Libido (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). For each of the 21 categories, participants choose one statement from a group of statements that best describes how they feel using a four-point likert scale (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI does not aim to be used to determine different diagnoses of individuals, but to be used to identify the presence of depression and acquire the level of depression currently being experienced (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

The first revision to the BDI came in 1972 and was later copyrighted in 1978; the BDI-IA, the amended and revised BDI, contains revisions to the statements in each category and re-ordering of statements to increase understanding (Beck, Steer, & Brown, 1996). The BDI-IA did not however address concerns and limitations regarding symptoms of depression and adherence to contemporary diagnostics criteria as it aligns

with only six out of the nine criteria for depression on the *Diagnostic and Statistical Manual of Mental Disorders - 3rd Edition (DSM-III)* (Moran & Lamburt, 1983). The BDI-II was purposely re-constructed by Beck, Steer, and Brown in 1996 to measure the prevalence and severity of depression in adults and adolescence while aligning with the criteria for depression in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders – 4th Edition (DSM-IV)* and to increase the validity of the measure (Beck, Steer, & Brown, 1996).

The BDI-II retains the 21-item format, but four new symptom items were added, four were omitted, and 14 statement options of the BDI items were reworded (Steer & Clark, 1997). The four new items include Agitation, Concentration Difficulty, Worthlessness, and Loss of Energy and replaced Weight Loss, Body Image Change, Work Difficulty, and Somatic Preoccupation on the BDI; Punishment Feelings, Suicidal Thoughts or Wishes, and Loss of Interest in Sex were the only 3 symptom items from the BDI that were not changed in the BDI-II (Steer & Clark, 1997). Due to these revisions, all categories on the BDI-II now correspond/correlate to all the criteria for Major Depressive Disorder as listed in the DSM-IV (Beck, Steer, and Brown, 1996). In addition, The BDI-II's time frame was increased to two weeks to correspond with the DSM-IV's temporal criteria for Major Depressive Disorders as well (Steer & Clark, 1997).

Each of the 21 categories on the BDI-II contains four statement options, with the exception of items 16 and 18, which contains seven options in order to signify either an

increase or decrease of appetite and sleep (Beck, Steer, & Brown, 1996). Participants are asked to rate each of these depressive symptoms on the four point likert scale established in the BDI, ranging from 0 (not present) to 3 (severe), in terms of how they have felt during the past two weeks (Beck, Steer, & Brown, 1996). Scoring is accomplished by adding up the point value for each of the 21 items/categories and can range from 0 to 63 for an overall score; higher scores correspond to higher depressive symptomology (Beck, Steer, & Brown, 1996). Beck, Steer, & Brown (1996) suggest the following cut score guidelines for the BDI-II: score of 1-13 minimal depression, 14-19 mild depression, 20-28 moderate depression, and 29-63 severe depression. The self-reported questionnaire typically takes 5-10 minutes to complete and requires at least a 6th grade reading level (Arbisi & Farmer, 2012).

The BDI-II has been the instrument of choice in over 2,000 studies and has been translated into multiple languages (Barroso & Sandelowski, 2001; Groth-Marnat, 2003). The BDI-II has been reported to have high internal consistency reliability with coefficient alphas of .92 for outpatients and .93 for the non-clinical sample compared to the alpha values of the BDI at .80 and the BDI-IA at .86 (Beck, Steer, & Brown, 1996). Test-retest reliability for the BDI-II was examine using data from 26 outpatients that were tested during their first and second therapy session one week apart; results showed a correlation of .93, which was significant at $p < .001$ (Beck, Steer, & Brown, 1996), "suggesting robustness against daily variations in mood" (Jackson-Koku, 2016, p. 174). The revisions of the BDI-II to reflect the DSM-IV has improved the inventory's validity

(Jackson-Kohu, 2016). Evidence of concurrent validity of the BDI-II comes from significant correlations with a number of other instruments, such as the Hamilton Depression Rating Scale (Jackson-Koku, 2016) (r = .71) and the Scale of Suicide Ideation (Beck Kovacs, & Weissman, 1979) (r = .37).

The BDI-II was selected for this study because it has shown to be relatively stable over time by the inventory's ability to measure chronic or recurrent depression rather than transitory mood states (Beck, 1972; Campbell, Belknap, & Templin, 1997; Campbell, Kub, & Rose, 1996), the vast use of the BDI in research studies, the inventories reliability and validity across multiple cultures, and the instruments successful utilization in previous research studies involving battered and abused women (Campbell, Belknap, & Templin, 1997; Campbell, Kub, & Rose, 1996; Clements, Sabourin, & Spiby, 2004; Kaslow, et al., 2002; Nixon, Resnick, & Nishith, 2004; Petretic-Jackson & Jackson, 2012; Reed & Enright, 2006; Wettersten, Rudolph, Faul, Gallagher, Transgsrud, & Adams, 2004).

The Modifiable Activity Questionnaire (MAQ)

The Modifiable Activity Questionnaire (MAQ) was used to access the physical activity levels of participants. The MAQ is a modifiable physical activity questionnaire that gathers data on participant's physical activity patterns (Kriska, et. al., 1990). The MAQ was developed to assess the physical activity levels of a NA/AI tribe, the Pima Indians, in Arizona in order to examine the relationship between physical activity and non-insulin-dependent diabetes mellitus in this population (Kriska, et al., 1990). At the

time of the MAQ's design, physical activity questionnaires were created for populations of high socio-economic statuses, and were commonly inappropriate for use in NA/AI populations; therefore, Kriska et al. (1990) created the MAQ to assess the unique qualities of this population.

Designed to be administered through an interview, the original MAQ measures both leisure and occupational physical activity performed during either one's lifetime, the past year, or the past month (Kriska, et. al., 1990). The questionnaire contains a comprehensive list of physical activities that is specific to the target population such as volleyball, hunting, fishing, dancing, basketball, and hiking for the Pima Indians (Kriska, et. al., 1990). In order to determine what activities should be included on the MAQ for the Pima Indians, Kriska et al. (1990) conducted a pilot test on the instrument using a sample of the population. When administered, researchers read the list of the common leisure time activities to participants and ask them to provide information on frequency and duration of those physical activities that they have engaged in at least ten different times during the past year (Kriska & Bennett, 1992; Kriska, et. al., 1990). Respondents are allowed to add activities that they commonly participate in that are not listed as well (Kriska, et. al., 1990). For the occupational assessment, participants are asked to list all jobs held over the past year, identify the physical activity(ies) related to the job(s), and indicate any active commuting, such as walking to work (Kriska, et. al., 1990). The MAQ typically takes 5-10 minutes to complete (Kriska & Bennett, 1992). To compute a composite activity estimate, the product of the duration and frequency of each activity,

expressed in hours per week (h/week), is calculated and hours for all activities are summed; calculations can also be expressed as Metabolic equivalent tasks (MET) hours per week (MET-h/week) by multiplying hours per week of each activity by its MET value and then summing all activities (Kriska, et. al., 1990). A MET refers to energy expenditure. One MET correspond to a person's resting metabolic rate, and is "3.5 ml of oxygen consumed per kilogram body mass per minute" (1 kcal/kg/h) (Kriska & Caspersen, 1997, p 8).

When examining the psychometric properties of the MAQ, Kriska et al. (1990) found Spearman correlation coefficient for 1-3 week test-retest to be 0.37 – 0.88 for ages 10-59 for the past year leisure time physical activity (Kriska, et al., 1990). Validity of the MAQ was examined by comparing the past week MAQ leisure time physical activity estimates against the Caltrac activity monitor, expressed in counts per hour; Caltrac counts per hour strongly correlated with past week MAQ leisure time physical activity estimates with Spearman coefficients of 0.62 with walking excluded and 0.80 with walking included (Kriska, et al., 1990). In 1994, Schulz et al. further validated the questionnaire by comparing the MAQ to energy expenditure determined by the doubly labeled water (DLW) method, "the gold standard for assessing total energy expenditure" (Sylvia, Bernstein, Hubbard, Keating & Anderson, 2014). Results from the study showed a Spearman correlation coefficient of 0.56 for past year leisure time physical activity, and an even stronger correlation of 0.74 when leisure and occupational activity where combined (Schulz, Harper, Smith, Kriska, & Ravussin, 1994).

The MAQ is designed to retain both reliability and validity while allowing for modifications to accommodate various cultures and populations usual physical activities (Delshad, Ghanbarian, Ghaleh, Amirshekari, Askari, & Azizi, 2015). For example, the MAQ can be modified to include any physical activity that is common to the group of subjects or population being examined (Bauer, Pivarnik, Feltz, Paneth, & Womack, 2010; Kriska & Bennett, 1992). The MAQ's ability to make these types of modifications in order to satisfy special populations is a strength of this questionnaire (Bauer et al., 2010; Kriska & Bennett, 1992; Wright, Groisman-Perelstein, Wylie-Rosett, Vernon, Diamantis, & Isasi, 2011). The MAQ has also been translated and utilized in France (Vuillemin et. al., 2000), Sub-Saharan (Sobngqi, et. al., 2001), and Iran (Delshad et al., 2015; Momeman, Delshad, Ghanbarian, Ghaleh, Amirshekari, Askari, & Azizi, 2012) to name a few. An additional modification to the MAQ came in 2000 when Vuillemin et al. reformatted the past year interviewer administered questionnaire into a self administered questionnaire. The self administration of the MAQ was validated by comparing responses to the self administered questionnaire and the interviewer administered questionnaire of the same 84 subjects; the authors found significant agreement between both formats with an Intraclass Correlation Coefficient (ICC) of 0.90 for past year leisure time physical activity and an ICC of 0.83 for combined leisure and occupational activity (Vuillemin, Oppert, Guillemin, Essermeant, Fontvieille, Galan, Kriska, & Hercberg, 2000).

There are a number of other questionnaires that measure physical activity such as the Recent Physical Activity Questionnaire (Besson, Brage, Jakes, Ekelund, & Wareham, 2009), the International Physical Activity Questionnaire (Craig, Marshall, Sjorstrom, Bauman, Booth, Ainsworth, Pratt, Ekelund, Yngye, Sallis, & Oja, 2003), the Previous Day Physical Activity Recall (Weston, Petosa, & Pate, 1997), and the 7-day Physical Activity Recall (Blair, Haskell, Ho, Paffenbarger, Vranizan, Farquhar, & Wood, 1985), however, these instruments either only assess short periods of time or are not comprehensive in assessment of physical activity for NA/AI women (Kriska, et al., 1990). The MAQ was selected for this study due the questionnaire's intended design for assessing levels of physical activity specifically in NA/AI populations (Kriska, et al., 1990), the questionnaires ability to account for participation in cultural/traditional physical activities of NA/AI's (Kriska, et al., 1990), and the MAQ's ability to maintain reliability and validity through various modifications and translations (Momenan, et al., 2012; Simon, Wagner, DiVita, Rauscher, Klein-Platat, Arveiler, Schweitzer, & Triby, 2004; Sobnqwi, Mbanya, Unwim, Aspray, & Alberti, 2001; Vuillemin, et al., 2000). For the intentions of this study, the MAQ will be used as a self administered questionnaire focusing specifically on the leisure time physical activities performed during the past year.

CHAPTER III

METHODS

This chapter will provide an overview of the methods used to investigate the relationship between self-reported levels of physical activity and symptoms of depression in Native American women who are survivors of domestic violence/intimate partner violence.

Participants

The participants in this study are Native American women in the state of Oklahoma who are enrolled or registered members of federally recognized tribes and who have been victims of domestic violence in the last 12 months. Due to the primary researcher access to, recruitment efforts focused on the Muscogee Creek Nation, the Iowa Tribe of Oklahoma, and the Pawnee Nation of Oklahoma tribe's domestic violence services departments. The United States currently recognizes more than 560 federal tribes, including Alaskan Native tribes (Bachman, Zaykoski, Lanier, Poteyeya,& Kallmyer, 2010); there are currently 38 federally recognized tribes in Oklahoma including the three tribes mentioned above (The American Indian Cultural Center and Museum, n.d.). Native American women of all tribes were welcomed and all data collected was included in the current study.

Procedures for Data Collection

The researcher posted flyers at the respective tribal agencies and on social media, and spoke at tribal events and groups, inviting Native American women who are survivors of DV/IPV to participate in the current study. The flyer informed participants about the criteria for the study and how to sign up. The flyer is presented in Appendix A. The flyer also informed participants that an incentive of $20 in the form of a gift certificate would be given to all participants after completion of data collection.

All participants were volunteers. Upon meeting with the participants or being contacted by an interested participant, the researcher distributed a cover letter and an informed consent form to all volunteers. The cover letter and informed consent form is presented in Appendix, B and C, respectively. Once participants consented to take part in the study, each participant was given a packet of social surveys. The packets included a demographic survey, the BDI-II, and the MAQ. Upon submitting the completed surveys, each participant was given or sent a gift certificate. Those participants who wished to participate in the study from home, were sent a self addressed, stamped envelope for convenient submission of completed survey packets.

In order to keep participants information confidential, all signed consent forms were scanned and then downloaded on a password encrypted computer in a locked office where they will be kept for ten years. Once the transferring of data was completed, the consent forms were destroyed. All consent forms were assigned random numbers that corresponded with a survey packet. Random numbers were assigned to consent forms

and survey packets using the random numbers statistical table in Bartz (1981) *Basic Statistical Concepts – 3rd Edition.* The data set from the survey packets were input into Statistical Package for the Social Sciences (SPSS) software, then scanned and downloaded on a password encrypted computer and will be kept for ten years in a locked office. As with the consent forms, once the transferring of the data from the survey packets was completed, the four forms that comprise the survey packets were destroyed.

Instruments

The purpose of the study was to investigate the relationship between physical activity, including cultural and traditional forms of Native American physical activity, and symptoms of depression in Native American women who are survivors of domestic violence. Participants were assessed for levels of physical activity using the Modifiable Activity Questionnaire (MAQ; Krisha, et al., 1990) and for symptoms of depression using the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996).

The MAQ is a self-reported questionnaire that gathers data on participant's physical activity patterns during leisure including NA/AI cultural and traditional forms of physical activity (Kriska, et. al., 1990). The questionnaire (Appendix D) contains a comprehensive list of physical activities to choose from and allows respondents to add activities that they commonly participate in that are not listed as well (Kriska, et. al., 1990). Participants are asked to provide information on the frequency and duration of those physical activities that they have engaged in at least ten different times during the past year Kriska & Bennett, 1992; Kriska, et. al., 1990). To compute a composite activity

estimate, the product of the duration and frequency of each activity, expressed in hours per week, is calculated and hours for all activities are summed; calculations can also be expressed as MET-h/week by multiplying hours per week of each activity by its MET value and then summing all activities (Kriska, et. al., 1990). In regards to the psychometric properties of the MAQ, Kriska et al. (1990) found Spearman correlation coefficient for 1-3 week test-retest to be 0.37 – 0.88 for ages 10-59 for the past year leisure time physical activity. The validity of the MAQ's past week version, as discussed in chapter 2, leisure time psychical activity was examined and showed a moderate to high validity with Spearman coefficients of 0.62 with walking excluded and 0.80 with walking included (Kriska, et al., 1990).

The BDI-II (Beck, Steer, & Brown, 1996) is a widely used instrument for measuring the prevalence and severity of depressive symptoms in populations (Archer, Maruish, Imhof, & Piotrowski, 1991; Beck, Steer, & Carbin, 1988; Beck, Steer, Ball, & Ranieri, 1996; Campbell, Belknap, & Templin, 1997; Gotlib & Cane, 1989; Petretic-Jackson & Jackson, 2012; Piotrowski & Keller, 1989; Piotrowski, Sherry, & Keller, 1985; Richter, Werner, Heerlein, Kraus, & Saucer, 1998; Steer & Clark, 1997). The 21-item self-report inventory (Appendix E) assesses the presence and level of depression currently being experienced by participants (Beck, Ward, Mendelson, Mock, and Erbaugh, 1961), and aligns with the criteria for Major Depressive Disorder as listed in the DSM-IV (Beck, Steer, and Brown, 1996). Each item on the BDI-II contains four statement options, with the exception of items 16and 18, which contains seven options in

order to signify either an increase or decrease of appetite and sleep (Beck, Steer, & Brown, 1996). Participants are asked to rate each of these depressive symptoms on the four point likert scale ranging from 0 (not present) to 3 (severe), in terms of how they have felt during the past two weeks (Beck, Steer, & Brown, 1996). Scoring is accomplished by adding up the point value for each of the 21 items/categories and can range from 0 to 63 for an overall score (Beck, Steer, & Brown, 1996). Scores of 1-13 indicate minimal depression, 14-19 indicate mild depression, 20-28 indicate moderate depression, and 29-63 indicate severe depression (Beck, Steer, & Brown, 1996). The BDI-II has demonstrated acceptable internal consistency with coefficient alphas of .92 for outpatients and .93 for the non-clinical sample (Beck, Steer, & Brown, 1996). Evidence of validity for the inventory comes from significant correlations with a number of other instruments as well (Beck, Kovacs, & Weissman, 1979; Jackson-Koku, 2016; Steer, Ball, Ranieri, & Beck, 1997).

In addition, a demographics questionnaire was utilized to ensure participants met the requirements to participate in the project. The 11-item demographics questionnaire (Appendix F) assesses the participant's tribal affiliation or enrollment, age, employment status, education, relationship status, and number of children. In addition, the questionnaire also requires participants to indicate the type of abuse, physical, sexual, and/or psychological abuse, that occurred in their previous dating, cohabitating, or marital relationship within the last 12 months.

Research Design

The study utilized a non-experimental correlation design. Physical activity levels and depression levels of NA/AI women who are survivors of DV/IPV were compared. In addition, an examination of the relationship between the participation in mainstream or non-cultural/traditional NA/AI physical activity verses participation in cultural/traditional NA/AI physical activity to levels of depression was conducted. The current study utilized the Spearman rho to analyze the data in order to determine the correlation between self-reported levels of physical activity and depression among participants for both mainstream physical activity participation and traditional NA/AI physical activity participation. The Pearson R was not utilized due to the expected small sample size. Lastly, descriptive statistics were utilized to analyze physical activity participation responses and scores to determine which type(s) of physical activity, both mainstream and cultural/traditional, were most commonly listed among survivors of DV/IPV.

Data Analysis

All data from the surveys was input into SPSS 24.0 for windows. The Spearman rho, or Spearman rank correlation coefficient, will be conducted to determine if regular participation in physical activity, both mainstream and cultural/traditional NA/AI activities individually and combined, is correlated to depression levels in NA/AI women who are survivors of DV/IPV. The data met Spearman rho assumptions of level of measurement, with both variables being at least ordinal data, and a monotonic relationship between variables due to depression levels decreasing as physical activity

levels increase. All correlation analysis of the research questions utilized an alpha level of $p < .05$ for this study.

The data from the surveys was further analyzed to determine which type(s) of physical activity, both mainstream and cultural/traditional to NA/AI populations, were most commonly listed among survivors of DV/IPV. Scores and responses were analyzed to determine the type(s) of activities that seem most beneficial for this group.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter provides a description of the subjects and the results of the collected data are presented. The four research questions are each discussed separately along with their respective statistical calculations and corresponding outcomes. For the first 3 research questions the study employed the Spearman rho, a non-parametric technique, to determine the correlation between self-reported levels of physical activity and depression among participants for both mainstream physical activity participation and cultural/traditional NA/AI physical activity participation using the Beck Depression Inventory-II and the Modifiable Activity Questionnaire in order to determine if regular participation in physical activity affects mental health (depression) outcomes among the study's population. The two assumptions of the Spearman rho were met. Both variables met the level of measurement assumption as they each were at least ordinal data, and a monotonic relationship between variables existed, for all three research questions, and was visually observed by creating scatterplots on SPSS. All correlation analysis of the research questions utilized an alpha level of $p < .05$ for this study. In addition, research question four was addressed using descriptive statistics. Data are presented in tables and figures where appropriate.

Sample Description

A total of 15 women completed survey packets. Of the 15, 2 packets were removed due to the subject's not meeting the inclusion criteria. Of the 13 participants remaining, all had experienced domestic violence in the last 12 months, but were no longer in an abusive relationship. All participants had been separated from their perpetrator anywhere from 1 to 9 months. The nature of the domestic violence included physical, psychological, sexual, and financial abuse such as punching, choking, isolation, stalking, forced sex, and required to give significant other their money. In addition, all participants were Native American women in Oklahoma who were citizens of a federally recognized tribe. There were seven tribes represented in the sample: four participants were citizens of the Wichita Tribe, two were Apache and two were Muscogee (Creek) Nation citizens, and the reaming four participants were citizens of the Shawnee Absentee Tribe, the Cherokee Nation, the Navajo Nation, and the Seneca-Cayuga Nation. The participants ranged in age from 18 to 46, with a mean age of 33.31. Five of the women were divorced, two were in new relationships, three remained married but were separated, and three were single. In regards to education, five of the participants had a high school degree, two had graduated from a technical or trade school, four others had completed some college course work, and two were college graduates. Out of the 13 women, eight were currently employed. In addition, five of the participant's salary range was $15,000 and less per year, two earned $15-24,999 per year, three earned $25,000-

34,999 per year and two earned $35,000-49,999 per year. All but two participants had children. Table 1 shows these results.

Although, receiving traditional forms of treatment was not a focus in the study, 7 out of the 13 participants were attending weekly group therapy sessions offered by a local tribe' s domestic family violence department. Two other participants had previously received help from their respective tribal departments, but mentioned they were not pleased with their services. Another participant had not received any treatment. Furthermore, she was unaware of the tribal resource in her area until participating in this study. She plans to reach out to address her mental health, particularly depression. The remaining three participants did not disclose if they had received any treatment for the abuse they endured.

Table 1
Sociodemographic Characteristics

Variable	Number	% Sample (n = 13)
Mean age		
33.31 (*SD* 10.03. range 18-46)	-	-
Tribal Affiliation		
Wichita Tribe	4	30.8
Cherokee Nation	1	7.7
Navajo Nation	1	7.7
Muscogee Creek Nation	2	15.4
Apache Tribe	3	23.1
Absentee-Shawnee Tribe	1	7.7
Seneca-Cayuga Nation	1	7.7

(*continued)*

Table 1
Continued

Variable	Number	% Sample (n = 13)
Religious Affiliation		
Baptist	4	30.8
Methodist	1	15.4
Christian	2	7.7
Traditional Native American Church	3	23.1
Other	3	23.1
Educational Status		
High school degree	5	38.5
Some college	4	30.8
College graduate	2	15.4
Technical or trade school graduate	2	15.4
Employment Status		
Employed, full time	6	46.2
Employed, part time	1	7.7
Employed	1	7.7
Unemployed	5	38.5
Personal Yearly Income		
$15,000 or less	5	38.5
$15,000 - $24,999	2	15.4
$25,000 - $34,999	3	23.1
$35,000 - $49,999	2	15.4
Undisclosed	1	7.7
Sexual Orientation		
Heterosexual	10	76.9
Bisexual	3	23.1

(*continued)*

Table 1
Continued

Variable	Number	% Sample (n = 13)
Marital Status		
Single	3	23.1
Married	3	23.1
Unmarried, partnered heterosexually	2	15.4
Divorced	5	38.5
Parent		
Yes	11	84.6
No	2	15.4
Type of violence		
Physical abuse	0	00.0
Psychological abuse	2	15.4
Sexual abuse	0	00.0
Financial abuse	0	00.0
Physical and psychological abuse	4	30.8
Physical, psychological, and sexual abuse	5	38.5
Physical, psychological, and financial abuse	2	15.4
Length of time separated		
1-6 months	9	69.2
7-12 months	3	23.1
Undisclosed	1	7.7

Depression and Participation in Physical Activity

Results of descriptive statistics analysis showed the sample to be overall depressed with a mean BDI-II score of 24.08 (SD 12.00) for all participants with a mean activity level of 19.54 MET-h/week over the last 12 months (SD 24.25). BDI-II scores

range from from 0-63 with scores of 0–13 indicating minimal depression, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depression (Beck, Steer, & Brown, 1996). A correlation analysis was used to examine the relationship between regular participation in physical activity, both mainstream and cultural/traditional NA/AI activities combined, and depression levels in NA/AI women who are survivors of DV/IPV. Results of the Spearman rho correlation coefficient showed no statistically significant correlation between physical activity participation and depression levels (r = -0.080, $p < .05$) (see Table 2).

Table 2
Correlations Between All Physical Activity Participation and Depression Scores

Activity	BDI-II Scores	MAQ Total Scores for All (MET-h/week)
BDI-II Scores		r = -0.080
MAQ Total Scores for All Activity (MET-h/week)	r = -0.080	

Note: (n = 13)

Depression and Participation in Cultural/Traditional Native American Physical Activity

Descriptive statistic results showed that those subjects who participate in cultural/traditional NA/AI physical activity were severely depressed with a mean BDI-II score of 29.90 (SD 10.31), and had a mean activity level of 39.37 MET-h/week over the

last 12 months (SD 28.10). Data showed a moderate negative correlation (r = -.564) between participation in Native American cultural/traditional forms of physical activity and self reported levels of depression. However, the correlation was not statically significant (p = .322) for the 5 participants in this category. Table 3 shows the matrix correlation coefficients for this category and figure 3 shows the trending negative correlation via a scatterplot.

Table 3
Correlations Between Participation in Traditional Native American Physical Activity and Depression Scores

	BDI-II Scores	MAQ Scores for Traditional Activity (MET-h/week)
BDI-II Scores		r = -.564
MAQ Scores for Traditional Activity (MET-h/week)	r = -.564	

Note: (n = 5)

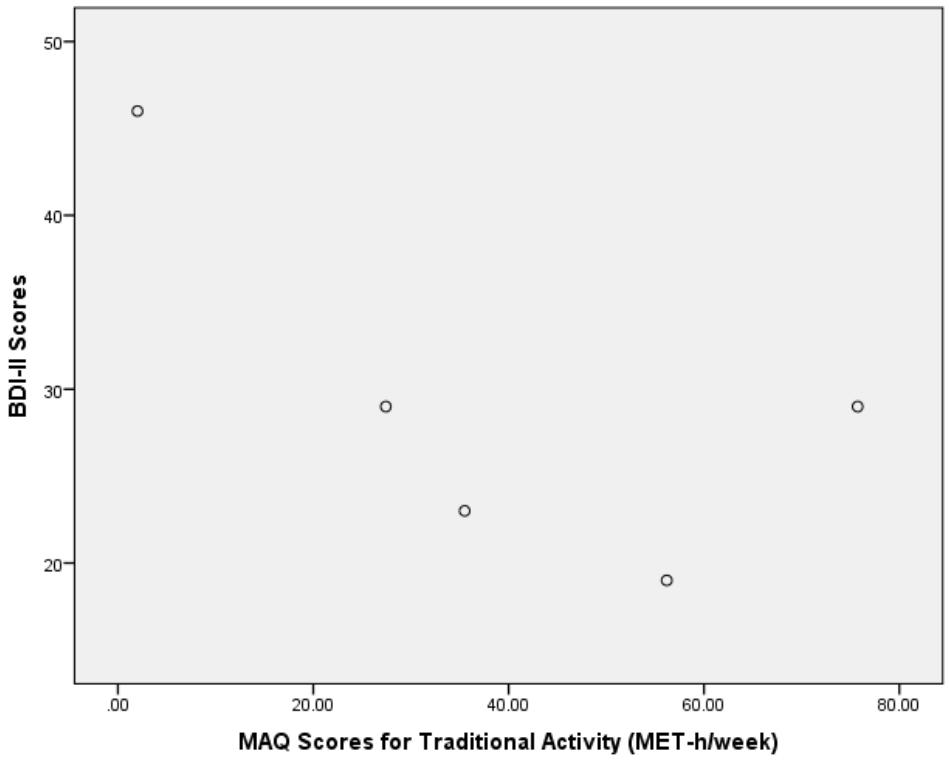

Figure 3. **Trending Negative Correlation for Traditional Native American/American Indian Physical Activity Participation and Depression Scores**

Comparison between Depression and Participation in Physical Activity and Cultural/Traditional Native American Physical Activity

Spearman's correlation coefficients were conducted separately between the BDI-II total scores and the MAQ scores for cultural/traditional physical activity and between the BDI-II total scores and the MAQ scores for mainstream physical activity. The BDI-II demonstrated a slightly more negative correlation with participation in cultural/traditional Native American activity(ies) (r =-.564) compared to participation in mainstream or non-traditional physical activity(ies) alone (r = -.217). However, the correlation for those

participants who do not participate in traditional activities was also not statically significant (p = .606) for the 8 participants in this category. These results are summarized in Table 4 with Figure 4 showing the trending negative correlation via a scatterplot for depression and participation in non-traditional physical activity(ies).

Table 4
Comparison between Depression and Participation in Physical Activity and Traditional Native American Physical Activity

	MAQ Scores for Traditional Activity (MET-h/week)	MAQ Scores for Physical Activity (MET-h/week)
BDI-II Scores	r = -.564	r = -.217
BDI-II Scores	(p = .464)	(p = .606)

Note: (n = 5 MAQ Scores for Traditional Activity; n = 8 MAQ Scores for Physical Activity)

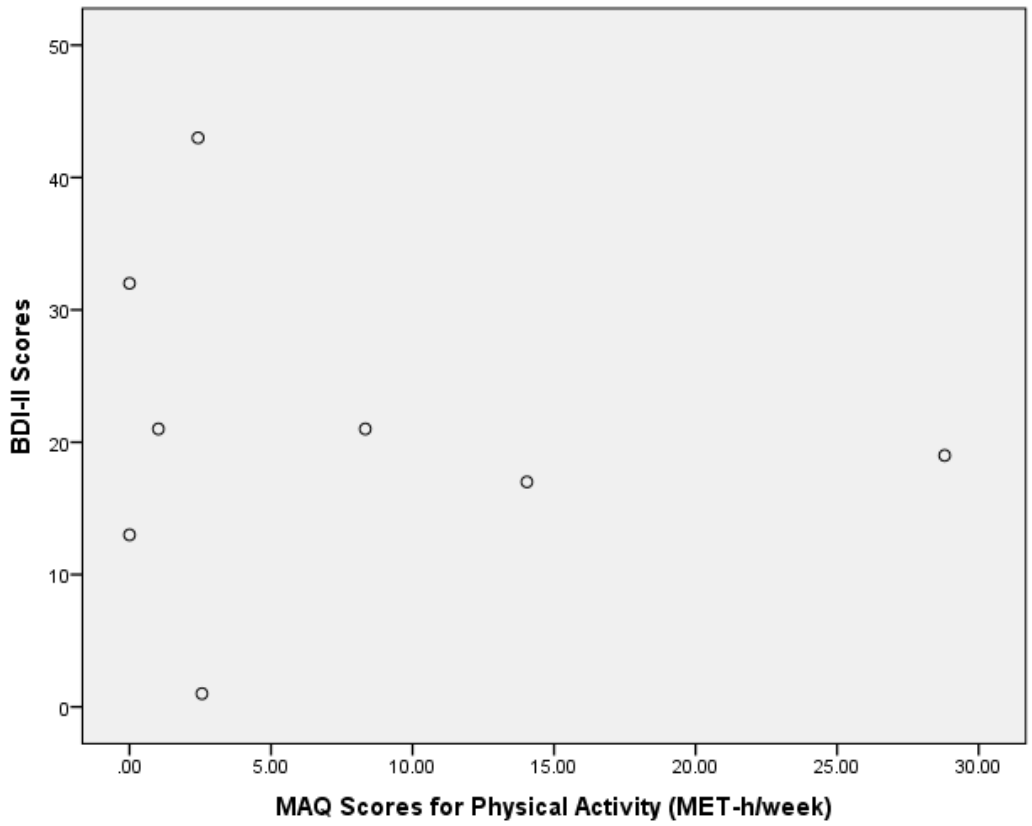

Figure 4. **Trending Negative Correlation for Non-Traditional Native American/American Indian Physical Activity Participation and Depression Scores**

Results of descriptive statistics analysis showed a difference in the mean physical activity levels for traditional NA/AI physical activity participation (39.37 MET-h/week over the last 12 months, SD 28.10) and mainstream or non-traditional physical activity participation (7.15 MET-h/week over the last 12 months, SD 10.01). Despite being more physically active, BDI-II results showed that women who participated in cultural/traditional NA/AI forms of physical activity were more depressed compared to

the women who did not participated in cultural/traditional NA/AI physical activity. The women who self-reported participating in cultural/traditional NA/AI physical activity were found to be severely depressed with a mean BDI-II score of 29.90 (SD 10.31) while those who did not participated in cultural/traditional NA/AI physical activity, but instead participated in mainstream physical activity, were found to be moderately depressed with a mean BDI-II score of 20.88 (SD 12.47). Table 5 shows the means and standard deviations among the first three research questions.

Table 5
Mean Scores and Standard Deviations for the Three Research Questions

	All Physical Activity		Traditional Activity		Non-Traditional Physical Activity	
	Mean	SD	Mean	SD	Mean	SD
BDI-II Scores	24.08	12.00	29.90	10.31	20.88	12.47
MAQ Scores (MET-h/week)	19.54	24.25	39.37	28.10	7.15	10.01

Note: (n = 13 MAQ Total Scores for All Activity; n = 5 MAQ Scores for Traditional Activity; n = 8 MAQ Scores for Non-Traditional Physical Activity)

Common Forms of Physical Activity Among Participants

There were 13 different physical activities chosen on the MAQ among the 13 participants. The most frequently reported physical activities for all participants were jogging, walking, and traditional dance. When looking separately at cultural/traditional

physical activities and mainstream or non-traditional physical activities, the most common forms of cultural/traditional NA/AI physical activity was dancing, gardening, and stickball. Walking, jogging, and weight training were the most frequently listed mainstream physical activities among participants. The results for the frequency of all physical activities for the sample are shown in figure 5 with cultural/traditional NA forms of physical activity denoted by an asterisk (*).

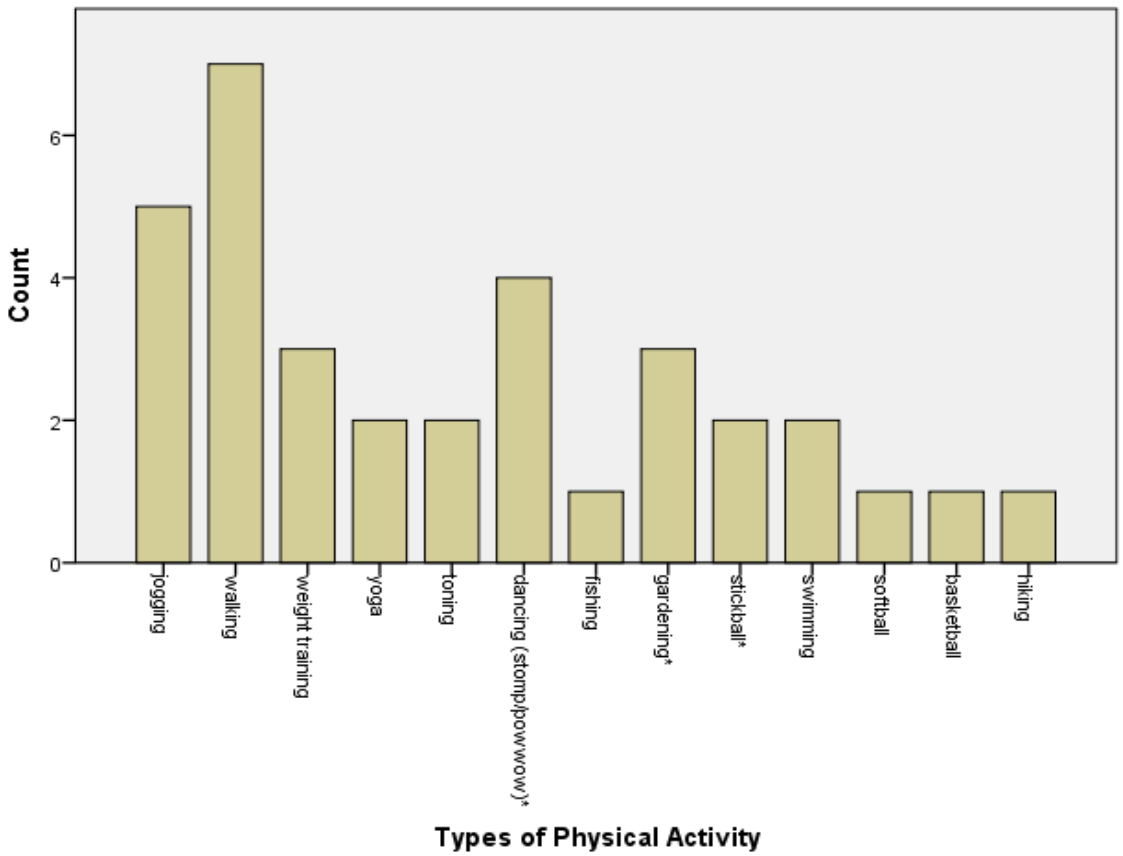

Figure 5: **Types of Physical Activity among Participants**

***Denotes Cultural/Traditional Native American forms of Physical Activity**

Summary

The Spearman rho correlation coefficient examined the nature of the relationship of self-reported depression and levels of physical activity, including both mainstream physical activity and cultural/traditional forms of Native American physical activity combined and separately. The results did not support the hypothesis that regular participation in physical activity mediates depression among Native American/American Indian women who have experienced domestic violence within the last 12 months. Therefore, the primary researcher failed to reject the research null hypothesis.

CHAPTER V

CONCLUSION, IMPLICATIONS, AND RECOMMENDATIONS

Overview

Due to the high prevalence rate of DV/IPV among NA/AI women, this study proposes to identify coping strategies that NA/AI women can employ to protect themselves from the psychological impact of victimization. Although literature has highlighted intervention efforts, such as community based interventions, public health and health care systems, and federal and/or national organizational efforts, utilization of these services by NA/AI women is extremely low due to numerous barriers this population faces (Olsen Wahab, 2004). One non-traditional coping strategy that has been overlooked when examining this population is the role of physical activity. Prior research has demonstrated the important relationship between physical activity and mental health, including improved symptoms of depression, the most commonly reported outcome of domestic violence (Scully, Kremer, Meade, Graham & Dudgeon, 1998).

The purpose of this research study was to examine the relationship between self-reported levels of physical activity and symptoms of depression among Native American women who are survivors of domestic violence with the intent to determine if participation in physical activity, including cultural/traditional NA/AI physical activity, might cause a decrease in perceived symptoms of depression among Native American

female survivors of domestic violence. The study looked to address the following questions: (a) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in physical activity and those who do not? (b) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in traditional Native American physical activity and those who do not? (c) Is there a difference in symptoms of depression between Native American/American Indian women who are survivors of domestic violence who regularly participate in physical activity and those who regularly participate in traditional Native American physical activity? (d) Which type(s) of physical activity is most likely to be effective for this population?

The results showed no statistical correlation between physical activity participation levels and depression scores for all subjects. This was an unexpected finding due to the relationship between physical activity and mental health being well documented in literature with the National Institute of Mental Health (NIMH) identifying the psychological benefits of regular participation as far back as the early 1900s (as citied in Bozeman, 2001). Regular participation in physical activity has proven to produce mental health benefits such as reducing depression, stress, and anger while increasing self esteem in numerous studies (Brill & Cooper, 1993; Craft & Landers, 1998; Hays, 1999; Morgan & Goldston, 1987; Scully, Kremer, Meade, Graham, & Dudgeon, 1998; Sonstroem, Harlow, & Josephs, 1994). Furthermore, exercise, a frequent type of physical

activity reported in this study, has shown to be a commonly prescribed treatment for depression, with roughly 2,000 primary-care physicians reporting they prescribed exercise for their patients in a 1983 survey conducted by Morgan and Goldstone.

When examining the impact that cultural/traditional NA/AI forms of physical activity had on depression scores of survivors, a moderately negative non- statistically significant correlation was observed. These findings conflict with previous findings regarding the beneficial use of NA/AI cultural and traditional healing practices in the treatment of victimization (Bien, 2005; Nebelkopf & Penagos, 2005; Saylors & Daliparthy, 2005; Williams, 2005; Villanueva, 2003). The use of cultural/traditional activities allows for "acknowledgement of historical roots of trauma, the use of culturally appropriate sanction to DV/IPV, and individuals to redefine themselves in culturally appropriate ways" (Oetzel & Duran, 2004, pg 57). In addition, the "Indigenist" Stress-Coping Model asserts that cultural activities serve as a moderator between stressors and health by operating as a buffer, strengthening emotional and psychological health, and mitigating the negative outcomes caused by domestic violence (Walters & Simoni, 2002; Walters, Simoni, & Campbell, 2002).

Similar result where found when looking separately at the effects on depression levels between cultural/traditional NA/AI physical activity and mainstream physical activity participation; a stronger negative correlation existed between traditional NA/AI physical activity and depression scores when compared to the relationship between mainstream, or non-traditional forms of NA/AI, physical activity, and depression scores.

Despite the negative trending for both groups, neither of the correlations was statistically significant. These findings do not align with previous research that has shown the importance and success of utilizing NA/AI cultural and traditional practices in the treatment of NA/AI populations opposed to mainstream or Western models of therapy (Bien, 2005; Chong, Fortier, & Morris, 2009; Duran & Duran 1991; Duran, Duran, & Braveheart, 1998; Legha & Novins, 2012; Nebelkopf & Penagos, 2005; Saylors & Daliparthy, 2005; Williams, 2005; Villanueva, 2003). Duran and Duran (1991) stated that mainstream or Western models of therapy do not work with NA/AIs due to the conflicting belief systems of the two cultures, and the hegemonic and Eurocentric undertones of the models that further oppress and are not sufficient to heal NA/AIs. As mentioned, the use of cultural/traditional Native American activities allows for education, reconnection, and understanding of the traditional NA/AI belief systems and traditional perspectives leading to improved self esteem, sense of identity, and healing of internalized oppression that is thought to be the root cause of domestic violence among other things (Duran, Duran, & Brave Heart, 1998).

These results may be attributed to several factors. First, the sample size was small (n = 13), and when looking to separate participants and compare groups those numbers further decreased (n = 8 and n = 5). The sample size of a research study can have an impact on effect sizes and power which in turn can affect the validity and reliability of the results. For example, some correlations were trending in the expected direction but not statistically significant. It is possible that these observed non-significant associations

between physical activity, both mainstream and cultural/traditional, and depression score outcomes were due to the small sample size.

In addition, the overall sample was not very active. Most participants in the study were moderately active or engaged in little physical activity which could have an effect on the outcome of the study and account for the lack of significant correlations between physical activity and depression. The larger the MAQ score (measured in METs) the greater the amount of energy one is expending, hence, the more activate a person is considered to be. The average score on the MAQ for all subjects in the current study was 19.54 Total MET-h/week averaged over the last 12 months with only 5 participants engaging in some form of physical activity all year round. Out of the remaining participants, 6 participants were active on average of 4.5 months out of the year and two participants reported no physical activity over the last 12 months. Furthermore, the traditional NA/AI physical activities reported in the study are not year round and opportunities to participate typically occurred once to twice per week for an average of 98-198 minutes per week failing to consistently meet the recommendation of 150-300 minutes of moderately intense activity per week set by the U.S. Department of Health and Human Services' (U.S. Department of Health and Human Services, 2018). This lack of participation in physical activity among the subjects could be due to the short length of time between removal from the abusive relationship and collection of data. At the time of data collection, 69.2% of survivors had been separated from their perpetrator no more than 6 months. Therefore, obtaining other needs such as shelter, employment, childcare,

and social services, may have taken precedence over engagement in physical activity in their leisure time (Concepcion & Ebbeck, 2005).

Another confounding variable to consider was other forms of treatment being utilized by survivors. More than half of the participants were currently attending a weekly community support group hosted by their local tribal domestic family violence department; this could account for their lower depression scores despite not being very active. The 7 survivors receiving group therapy recorded an average score of 20.41 MET-h/week over the last 12 months on the MAQ and were moderately depressed with an average BDI-II score of 20.57. Those survivors currently not receiving treatment had an average BDI-II score of 28.17, one point shy of being considered severely depressed, and an average MAQ score of 18.5 MET-h/week.

Limitations

The study contained several limitations that are worth addressing. As mentioned previously, the sample size was small (n = 13), and is even smaller when looking to separate participants and compare mainstream and cultural/traditional physical activity participation (n=8 and n=5) and depression scores. The sample size of a research study can have an impact on effect sizes and power which in turn can affect the validity and reliability of the results. For example, some correlations were trending in the expected direction but not statistically significant. It is possible that these observed non-significant associations between physical activity, both mainstream and cultural/traditional, and depression score outcomes were due to the small sample size. Future research is needed

with larger samples to determine if the observed trending would be significant if the study was replicated with greater statistical power.

The small sampling size could be attributed to sampling technique or recruitment. Most participants of this study were recruited through tribal family or domestic violence agencies in Oklahoma with more than half of the study's participants (53.8%) being from one particular tribal agency. Furthermore, 69.2% of the sample would be considered help-seeking participants as they each had or were currently receiving or utilizing tribal services for their victimization. Waldrop and Resnick (2004) proposed that survivors who seek help may not be reflective of the population of survivors of domestic violence as a whole. It has been suggested by Watlington and Murphy (2006) that help seeking participants vary from community samples in areas such as violence frequency, severity of abuse, and barriers to service to name a few. As previously stated, NA/AI women face numerous barriers to, and are less likely to use, services for treatment (Allaggia, Dylan, & Regehr, 2008; Crossland, Palmer, & Brooks, 2013; Hamby, 2008; Oetzel & Duran, 2004; Rivers, 2005; Wahab & Olsen, 2004). Thus, the study's sample of NA/AI women may be different from most NA/AI survivors.

Additionally, recruitment focusing on NA/AI women who live in Oklahoma limited generalizabilty of this research study. This sample cannot be reflective of the 562 total federally recognized tribes in the United States who each have their own language, customs, and tribal systems, nor does it reflect those tribes and indigenous peoples who are not recognized by the U.S. government. The small sample size also calls for caution

in generalizing results of the study for NA/AI women in Oklahoma. Lastly, the sample size may have been greater had the study imposed a longer time frame for recruitment of participants.

Another limitation is the instruments being used in the study. It is possible that additional variables not included in this study may be responsible for reported symptoms of depression on The Beck Depression Inventory. These variables could include severity of abuse, length of time in abusive relationship, type of abuse experienced by the survivor, level of self esteem, and social support network of survivor to name a few. These variables were not controlled for within the design of this study. The Modifiable Activity Questionnaire accounts for only structured leisure time and often does not account for unstructured daily activities and/or light forms of physical activity (Sylvia, Bernstein, Hubbard, Keating, and Anderson, 2014). However, it should be noted that the MAQ does control for work related activity.

Next, the data were based on self reported measures which increase the possibility of inaccuracies in the data. This can be problematic as self reported data can vary and be biased. Participants may have recall errors, feel apt to give more socially acceptable answers, and the questions on self reported measurement tools can be confusing and be interpreted differently among subjects (Salters-Pedneault, 2018).

Finally, it should be noted that the primary researcher is a citizen of a federally recognized tribe in the state of Oklahoma, as well as a survivor of domestic violence, which could account for the ability to gain access to the study's population.

Implications

Although this study failed to show statistical significance, there are some potential implications that make the study an important contribution to literature and practice. Concerning research implications, NA/AI women have the highest prevalence rate of domestic violence and yet only a few studies have looked to discover effective coping-mechanism for this population; the current study draws attention to this serious topic and puts NA/AI women in the forefront of the discussion. This study is the first of its kind to examine the potential benefits that physical activity, mainstream and cultural/traditional forms, could have on depression levels among NA/AI women who have experienced domestic violence despite the successful use of physical activity on depression in other populations of survivors. Thus, the current study extends the line of research on victimization in the lives of NA/AI women and will hopefully serve to ignite additional research in this area.

The negative trending correlations highlight the need for further investigation of the relationship between physical activity participation and depression scores in NA/AI survivors of domestic violence. If, in fact, there is a statistically significant correlation found, the research in this area could be extremely important for tribal agencies and other services providers working with NA/AI women because it would offer an additional approach, or alternative, to mainstream forms of treatment for DV/IPV survivors. These findings could have financial implications as well due to the cost-effectiveness of utilizing physical activity, both mainstream and cultural/traditional forms, as a coping

mechanism for the health outcomes of DV/IPV. In addition, further findings could encourage culturally responsive standards of training and offering of culturally specific services, as alternatives, or in conjunction with mainstream services.

Furthermore, this research identifies common physical activities among survivors which may help to narrow the focus on what physical activities should be included in future studies to examine the relationship between physical activity and depression in NA/AI women. In addition, the data showed that those traditional activities that NA/AI women in the study participated in were not year round but tended to happen in the warmer months of March through September. Tribal agencies and service providers serving this population may want to focus on providing supplementary cultural/traditional NA/AI physical activities when those activities identified in the study are not normally practiced. Again, this information could be useful for programming considerations.

Most importantly, by speaking with survivors during the collection of data the primary researcher was able to provide non-judgmental support sending an important message that someone understood them and wanted to help. Also, the primary investigator provided information regarding tribal resources for survivor's within their respective communities who had no previous knowledge of the domestic violence resources available to them particularly mental health services. Tribal agencies and other service providers may want to examine community awareness of resources and current outreach initiatives in order to eliminate barriers to service as this is an issue within this population.

Recommendations for Future Research

Although the findings of this research failed to show a statistically significant relationship between physical activity participation and depression levels in NA/AI women who are survivors of domestic violence, this study serves as a foundation upon which future research can build. This study is the first of its kind to examine the use of physical activity as a coping mechanism for depression in NA/AI survivors of domestic violence and leaves numerous possible directions for future studies. Future research should begin with increasing the sample size of the study to determine if the observed trending correlations would be significant if the study was replicated with greater statistical power. One way to increase sample size would be to identify and implement additional recruitment strategies and increase the length of recruitment time.

It would be beneficial to implement a physical activity program, either mainstream, cultural/traditional, or a combination of both, for an extended period of time as part of the services offered at a tribal agency or at a tribal agency's affiliated women's shelter. Using pre- and post-test scores for the BDI-II and the MAQ would allow for a better observation of the effect participation in physical activity has on depression levels within this population. These pre- and post-assessments, as well as measurements throughout the study, would allow for changes in depression levels associated with participation in physical activity to be more closely evaluated. The common activities among participants identified in the current study could assist in what physical activity to implement.

Follow up studies on the implementation of a program, should look to compare the effectiveness of different forms of physical activity, both mainstream and cultural/traditional, on depression scores in groups of DV/IPV survivors (i.e. running vs weight training, stomp dancing vs running, etc.) to offer more insight into the possible mechanics of how physical activity may reduce depression in this population. Additional studies are needed to compare the effectiveness of physical activity and group therapy, and the effectiveness of physical activity as a co-treatment with group therapy in treating depression in DV/IPV survivors as those NA/AI women who were currently seeking treatment had a lower average BDI-II score compared to those not seeking treatment in this study. Furthermore, investigation of the benefits of utilizing physical activity, in particular cultural/traditional NA/AI forms, and group therapy would support and/or assist with theory development of the Hybrid Model and the "Indigenist" Stress Coping Model.

Looking specifically at the utilization of cultural/traditional forms of NA/AI physical activity as a coping mechanism against outcomes of DV/IPV, future research should examine the degree in which participants identify with their respective NA/AI culture and participants level of cultural readiness. If research is to properly evaluate the utilization of cultural/traditional forms of physical activity in this population, survivors must be open to such activities in order for the participation in cultural activities to have their desired effects (Chong, Fortier, & Morris, 2009). For example, future studies may want to include only, or differentiate between, survivors who are immersed in their

culture and/or identify as being NA/AI and those that are simply an enrolled citizen of a tribe for benefits associated with citizenship (i.e. subsidized health care, social services, educational grants, etc…) but who are not closely affiliated or personally connected to the heritage of their respective tribe.

A qualitative study may be valuable in bettering understanding the overall psychological benefits participating in physical activity provides to survivors. A previous qualitative study in another population of DV/IPV survivors has found exercise to increase life satisfaction, sense of self, and normalcy among survivors (Concepcion & Ebbeck, 2005). Offering a qualitative component provides participants the opportunity to explain how participating in physical activity affects them holistically; furthermore, the qualitative design can be therapeutic and transformative for the participant as it allows for discussion of their experience in a safe environment with an empathetic, non-judgmental listener (Murray, 2003; Shamai, 2003). For example, Shamai (2003) posed that giving battered women the opportunity to share their story as a means to assist in improving treatment options for others that experience violence can be empowering and self-helping for participants in qualitative studies. Lastly, adding a qualitative or conversational component in the Internal Review Board application of future quantitative studies may be beneficial as well as this would account for conversations that may occur between the primary researcher and participant(s) during face-to-face data collection.

The initial level of depression could affect the effectiveness of physical activity (Craft & Landers, 1998). Future studies should employ individuals who are severely

depressed according to the BDI-II or those survivors who have been clinically diagnosed with depression to better evaluate how physical activity influences the initial level of depression in survivors of domestic violence. In addition, identifying the type of abuse survivors were exposed to and the severity of the abuse would be beneficial to include in future studies as well. The type and severity of abuse could affect depression levels and, thus, affect the role physical activity has on depression levels in survivors (Mechanic, M. B., Weaver, T. L., & Resick, P. A. (2008).

Other variables that could be considered in future research to better understand the relationship between physical activity and depression include self esteem, empowerment, and social support. An increase in physical fitness has shown to increase self esteem which in turn decreases depression (Bozeman, 2001; DiLorenzo et. al, 1999; Sonstroem, Harlow, Josephs, 1994; Sonstroem & Morgan, 1989). Self esteem not only serves as a moderator for depression, but is also important in transitioning and staying out of an abusive relationship (Harter, 1999). Empowerment is one of the main goals of clinicians for this population, and physical activity has been thought to promote empowerment by allowing women to experience control over their own bodies (Concepcion & Ebbeck, 2005). This sense of freedom and autonomy has proven beneficial in other populations of survivors of DV/IPV (Concepcion & Ebbeck, 2005). Another variable to consider is the social support aspect of participating in physical activity, particularly group exercise or cultural/traditional NA/AI activities that often take place in large groups. This support and group cohesion can offer a feeling of

belongingness and connection to others and their community. Therapy in group settings is often used in many NA/AI communities to treat DV/IPV as the group format aligns with NA/AI traditions and values (Norton and Manson, 1997). Addition of any of the 3 variables to future studies could help to further understand the benefits of using physical activity as a coping mechanism for NA/AI women who are survivors of domestic violence.

Conclusion

The rates of victimization among NA/AI women are much greater when compared to other populations (Saylors & Daliparthy, 2006); NA/AI women are almost three times more likely to be murdered by a significant other compared to Hispanics and Caucasians, and more NA/AI women are almost three times more likely to be murdered by a significant other compared to Hispanics and Caucasians, and more likely to sustain a serious injury compared to all other races in the U.S. during these types of incidence (Oetzel & Duran, 2004). Furthermore, the psychological distress associated with DV/IPV often does not stop when the abuse does. Depression has been the most commonly reported outcome associated with domestic violence (Scully, Kremer, Meade, Graham & Dudgeon, 1998) and the main reason survivors seek health care (Campbell & Soeken, 1999; Gleason, 1993). Due to the known benefits of physical activity on mental health, including improved symptoms of depression (Brill & Cooper, 1993; Hays, 1999; Morgan & Goldston, 1987; Scully, Kremer, Meade, Graham, & Dudgeon, 1998), and the major barriers faced by NA/AI women in seeking treatment (Allaggia, Dylan, & Regehr,

2008; Crossland, Palmer, & Brooks, 2013; Hamby, 2008; Oetzel & Duran, 2004; Rivers 2005; Wahab & Olsen, 2004), it was vital to study the use of physical activity as an alternative coping mechanism for NA/AI women who are survivors of domestic violence. Although the current study failed to show statistical significance, the extensive review of literature and trending negative correlations observed via scatterplots, addresses the gap in literature on this population, begins the process of inquiry, and prompts further investigation on the effectiveness of physical activity, both mainstream and cultural/traditional, on depression in NA/AI women who are survivors of DV/IPV. These future findings may help to reduce violence in Native American communities and begin to assist in dismantling this cycle of abuse/victimization which is crucial to the longevity of Native American people.

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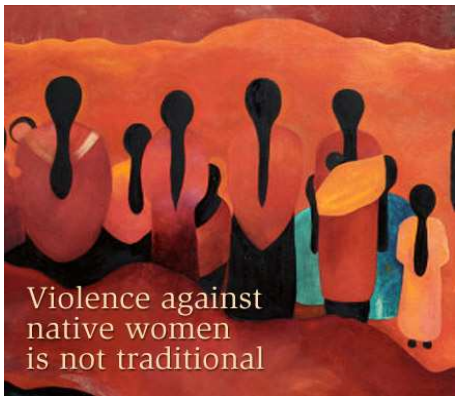
APPENDICES

Appendix A

Recruitment Flyer



Are you a survivor of domestic violence?

Willing to share your story and help others?

Now recruiting Native American women ages 18 and older who identify as a survivor of domestic violence to participate in a study regarding the role of physical activity, including traditional Native American activities, on depression associated with their experiences. Study participation is confidential and includes a one time completion of 4 surveys/questionnaires that take approximately 25-45 minutes. Participants will receive a $20 incentive in the form of a gift certificate after completion. To participate in the study, you must be a Native American woman who is an enrolled or registered member of a federally recognized tribe in the state of Oklahoma, and who has been a victim of domestic violence in the last 12 months and is NOT currently involved in that or any other abusive relationship.

Who I am? My name is Nicole Been and I am a doctoral candidate in the Health, Leisure, and Human Performance program at Oklahoma State University. I am a member of the Muscogee Creek Nation; my research focuses on providing insight on effective coping mechanisms and interventions, and removal of barriers to services for Native American women who are survivors of domestic violence.

Please call or email to find out additional information!

Nicole Been

407-409-4601

nbeen@okstate.edu

Appendix B

Participant Information/Written Recruitment Letter

Dear Participant,

My name is Nicole Been and I am a doctoral candidate in the Health, Leisure, and Human Performance program at Oklahoma State University. My dissertation is on how participation in physical activity affects levels of depression in Native American/American Indian women who are survivors of domestic violence.

I am seeking participants to complete a packet of four surveys/questionnaires. The first questionnaire will be a short demographics survey to learn more about you as a participant. The second questionnaire will ask how conflicts were handled by you and your partner within the last 12 months. The third survey will allow you to list the type(s) of physical activities you have participated in over the last 12 months and how often you participate(d) in these activities. The last survey will ask you to choose one statement out of a group of statements that best describes how you have been feeling. You, the participant, will only be expected to complete the surveys/questionnaires once. It should take you about 25-45 minutes.

To participate you must be 18 years of age or older, have experienced domestic violence/intimate partner violence/abuse by a partner in the last 12 months, and be an enrolled or registered member of a federally recognized tribe.

To take part in this study please do the following: 1. Read the informed consent form. Ask questions if you have any. 2. Sign the consent form. Be sure to keep one informed consent form for yourself. 3. Complete the questionnaires in your packet. As a participant in this study, you will receive a $20 incentive in the form of a gift certificate after completion of data collection.

Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent to participation at any time. In addition, no identifying information will be collected during the study. The records of this study will be kept private. Research records will be stored on a password protected computer and only the researcher and individuals responsible for research oversight will have access to the records. After 10 years, all records will be destroyed.

If you have further questions or comments about your participation in the study and/or request information about the results, please contact the primary investigator, Nicole Been at nbeen@okstate.edu. If you have questions about your rights as a research volunteer, you may contact the IRB Office at 223 Scott Hall, Stillwater, OK 74078, (405) 744-3377 or irb@okstate.edu.

Thank you for your interest!

Nicole Been, MSEdu
Doctoral Candidate

Health, Leisure, and Human Performance
Oklahoma State University

Tim Passmore, Ph.D
Dissertation Chair & Associate Professor
School of Kinesiology, Applied Health, and Recreation
Oklahoma State University

Appendix C

Informed Consent

CONSENT FORM
The Role of Physical Activity among Native American Survivors of Domestic Violence

Background Information

You are invited to be in a research study of on how participation in physical activity affects levels of depression in Native American/American Indian women who are survivors of domestic violence. We ask that you read this form and ask any questions you may have before agreeing to be in the study. Your participation is entirely voluntary.

This study is being conducted by:
Nicole Been, a doctoral candidate in Health, Leisure, & Human Performance program at Oklahoma State University under the direction of Dr. Tim Passmore, School of Kinesiology, Applied Health, and Recreation at Oklahoma State University.

Procedures

If you agree to be in this study, we would ask you to do the following things:
Complete a packet of three surveys/questionnaires. The first questionnaire will be a short demographics survey to learn more about you as a participant and ensure you meet the requirements for the study. The second survey will allow you to list the type(s) of physical activities you have participated in over the last 12 months and how often you participate(d) in these activities. The last survey will ask you to choose one statement out of a group of statements that best describes how you have been feeling. You, the participant, will only be expected to complete the surveys/questionnaires once. It should take you about 20-40 minutes.

Participation in the study involves the following time commitment:
You, the participant, will only be expected to complete the four surveys/questionnaires once. It should take you about 15-30 minutes to complete all three surveys/questionnaires.

Risks and Benefits of being in the Study

Risks: Due to the nature of the topic some questions may cause discomfort. Contact information for the tribe's Family Violence/Human Services Department's and counseling services are provided with this cover letter. In addition, as a volunteer, you can discontinue the completion of surveys at any time.

The benefits to participation are: There are no direct benefits to you. More broadly, this study may help the researchers learn more about the use of physical activity and traditional Native American/American Indian activities potential affect on depression

levels in Native American women who are survivors of domestic violence/intimate partner violence, and may help to assist advocates, service providers, and tribal agencies to design interventions to better serve surviving women.

Compensation

You will receive a $20 incentive in the form of a gift certificate as compensation for your participation. You will receive payment after completion of data collection. To be eligible to receive the compensation, you need to fully complete all four surveys/questionnaires within the packet.

Confidentiality

The information you give in the study will be stored anonymously. This means that your name will not be collected or linked to the data in any way. Only the researchers will know that you have participated in the study. The researchers will not be able to remove your data from the dataset once your participation is complete.

We will collect your information through paper surveys/questionnaires. This information/data will be scanned and then downloaded on a password encrypted computer in a locked office and kept for ten years. Only the researcher and individuals responsible for oversight will have access to the records. This informed consent form will be kept for 10 years after the study is complete, and then it will be destroyed also. Your data collected as part of this research project, may be used for future research studies.

It is unlikely, but possible, that others responsible for research oversight may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so. Finally, confidentiality could be broken if materials from this study were subpoenaed by a court of law.

Voluntary Nature of the Study

Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time.

Contacts and Questions

The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 407-409-4601, nbeen@okstate.edu. If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

You will be given a copy of this information to keep for your records.

Statement of Consent (Indicate Yes or No by using an "X"):

I have read the above information. I have had the opportunity to ask questions and have my questions answered. I consent to participate in the study.

___Yes ___No

I give consent for my data to be used in future research studies:

___Yes ___No

I give consent to be contacted for follow-up in this study or future similar studies:

___Yes ___No

Signature of Investigator: _____Date: _____

Appendix D

Modifiable Activity Questionnaire (MAQ)

Modifiable Activity Questionnaire

1. Please circle all activities listed below that you have done more than 10 times in the past year.

01 Jogging (outdoor, treadmill)	15 Football/Soccer	28 Stair Master
02 Swimming (laps, snorkeling)	16 Racquetball/Handball/Squash	29 Fencing
03 Bicycling (indoor, outdoor)	17 Horseback riding	30 Hiking
04 Softball/Baseball	18 Hunting	31 Tennis
05 Volley Ball	19 Fishing	32 Golf
06 Bowling	20 Aerobic Dance/Step Aerobic	33 Canoeing
07 Basketball	21 Water Aerobics	34 Water skiing
08 Skating	22 Dancing (Powow/Stomp)	35 Jumping Rope
09 Martial Arts (karate, judo)	23 Gardening or Yard work	36 Snow skiing (X-country,Nordic Trk)
10 Tai chi	24 Badminton	37 Snow skiing (Downhill)
11 Calisthenics/Toning	25 Strength/Weight training	38 Snow shoeing
12 Wood Chopping	26 Rock Climbing	39 Yoga
13 Water/coal hauling	27 Scuba Diving	40 Other(stickball, horseshoes, etc.)

14 Walking for exercise (outdoor, indoor at mall or fitness center, treadmill)

List each activity that you circled in the "Activity" box below, check the months you did each activity over the past year (12 months) and then estimate the average amount of time spent in that activity.

Activity	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average # of Times Per Month	Average # of Minutes Each Time

2. In general, how many HOURS per DAY do you usually spend watching television? ___ hrs

3. Excluding time spent at work, in general how many HOURS per DAY do you usually spend sitting at the computer or performing other screen - based activities? ___ hrs

4. Over this past year, have you spent more than one week confined to a bed or chair as a result of an injury, illness or surgery? Yes_____ No_____
If yes, how many weeks over this past year were you confined to a bed or chair? _____ weeks

5. Do you have difficulty doing any of the following activities?
a. getting in or out of a bed or chair? Yes_____ No_____
b. walking across a small room without resting? Yes_____ No_____
c. walking for 10 minutes without resting? Yes_____ No_____

6. Did you ever compete in an individual or team sport (not including any time spent in sports performed during school physical education classes)?
If yes, how many total years did you participate in competitive sports?

7. Have you had a job for more than one month over this past year, from last _____ to this _____?

List all JOBS that the individual held over the past year for more than one month. Account for all 12 months of the past year. If unemployed/disabled/retired/homemaker/student during all or part of the past year, list as such and probe for job activities of a normal 8 hour day, 5 day week.

Job Name	Job Code	Walk or bicycle to/from work Min/Day	AVERAGE JOB SCHEDULE Mos/Yr	Day/Wk	Hrs/Day	Out of the total # of "Hrs/Day" the individual reported working at this "job", how much of this time was usually spent sitting? Enter this # in "Hrs Sitting" column, then place a check "T" in the category which best describes their job activities when they were not sitting. Hrs Sitting	Check the category that best describes job activities when not sitting A	B	C

Category A	Category B	Category C
(includes all sitting activities)	(includes most indoor activities)	(heavy industrial work, outdoor construction, farming)
Sitting	Carrying light loads	Carrying moderate to heavy loads
Standing still w/o heavy lifting	Continuous walking	Heavy construction
Light cleaning - ironing, cooking, washing, dusting	Heavy cleaning - mopping, sweeping, scrubbing, vacuuming	Farming — hoeing, digging — mowing, raking
Driving a bus, taxi, tractor	Gardening - planting, weeding	Digging ditches, shoveling
Jewelry making/weaving	Painting/Plastering	Chopping (ax), sawing wood
General office work	Plumbing/Welding	Tree/pole climbing
Occasional/short distance walking	Electrical work Water/coal/wood hauling	Sheep herding

JOB CODES

Not employed outside of the home:	Employed (or volunteer):
1. Student	6 Armed Services
2. Home Maker	7. Office worker
3. Retired	8. Non-office Worker
4. Disabled	
5. Unemployed	

Appendix E

Beck Depression Inventory – II (BDI-II)

This inventory may be obtained from:

Harcourt Assessment
Attention Customer Service
19500 Bulverde
San Antonio, TX 78259

Appendix F

Demographic Questionnaire

Demographics Information Form

1. What is your age? _____

2. What is your current religious affiliation, if any?
    a. Methodist
    b. Lutheran
    c. Catholic
    d. Baptist
    e. Atheist
    f. Hindu
    g. Buddist
    h. Jewish
    i. Muslim
    j. Agnostic
    k. None
    l. Other: (*please specify)* _____

3. How do you currently describe your sexual orientation:
    a. Heterosexual
    b. Gay/Lesbian
    c. Bisexual
    d. Transgendered/Two spirited
    e. Other: (*please specify)* _____

4. What is your current marital status?
    a. Single
    b. Married
    c. Unmarried, but partnered heterosexually
    d. Unmarried, but partnered homosexually
    e. Divorced
    f. Widowed

5. Are you a parent? _____ Yes; _____ No. If YES, how many children _____

6. Are you currently employed? _____ Yes; _____ No.
    *IF YES, what is your occupation? _____
    *IF YES, how many hour per week? __ 1- 10 __11-20 __21-30 __31/more

7. Please indicate your present level of yearly income.
    a. $15,000 or less
    b. $15,000 - $24,999
    c. $25,000 - $34,999
    d. $35,000 - $49,999
    e. $50,000 - $74,999
    f. $75,000-$99,999
    g. Greater than $100,000

8. Highest level of education completed:
    a. Elementary school
    b. High school degree
    c. Some college
    d. College graduate
    e. Technical or trade school graduate
    f. Professional or graduate degree
    g. Other: (*please specify)* _____

9. How would you describe the community you grew up in?
    a. Rural (country)
    b. Urban (city)
    c. Suburban (subdivision)

10. What federally recognized tribe are you enrolled or a registered member of?
    a. Muscogee Creek Nation
    b. Iowa Tribe of Oklahoma
    c. Pawnee Nation of Oklahoma
    d. Cherokee Nation
    e. Chickasaw Nation
    f. Citizen Potawatomi Nation
    g. Sac and Fox Nation
    h. Seminole Nation
    i. Other: (*please specify)* _____

11. Have you experienced domestic violence in the last 12 months? ____ Yes; _____ No.
    If YES, Please identify what type of domestic violence you experienced, choose all that apply:

- Physical Abuse
  This can include things such as, punching, choking, pushing, slapping, kicking, being burned, and/or being bitten.
- Psychological/Mental/Emotional Abuse
  This can include things such as, name calling, insults, being blamed by partner for everything, extreme jealousy, shaming, isolation, and/or stalking.
- Sexual Abuse
  This can include things such as forced sex, forced unprotected sex/sabotaging birth control methods, and/or hurting partner physically during sex.
- Other (please specify):
  _____

VITA

Nicole M. Been

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE ROLE OF PHYSICAL ACTIVITY AMONG NATIVE AMERICAN SURVIVORS OF DOMESTIC VIOLENCE

Major Field: Health, Leisure, and Human Performance

Education:

Completed the requirements for the Doctor of Philosophy in Health, Leisure, and Human Performance at Oklahoma State University, Stillwater, Oklahoma in May, 2019.

Completed the requirements for the Master of Education in Sports Management at Baylor University in Waco, Texas in December, 2006.

Completed the requirements for the Bachelor of Science in Athletic Training at Oklahoma State University, Stillwater, Oklahoma in December, 2004.

Experience:

Assistant Professor, Health, Physical Education, & Recreation, 8/2016-Present
Langston University, Langston, Oklahoma

NAIA Faculty Athletic Representative, 12/2013-Present
Langston University, Langston, Oklahoma

Instructor, Health, Physical Education, & Recreation, 8/2012-8/2016
Langston University, Langston, Oklahoma

Professional Memberships:

2011-Present: Oklahoma Recreation and Parks Society (ORPS)
2014-Present: National Recreation and Park Association
2015-2016: North American Society for Sport Management
2015-2016: North American Society for the Sociology of Sport