Physical Activity Behaviors and Motivations
in an Adult First Nation Population

by

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Abstract

The prevalence of diabetes and obesity in Aboriginal populations across North America is a cause for concern. Regular physical activity has been shown to mitigate these risk factors. Despite this, there is a limited body of research that assesses the physical activity behaviors of Aboriginal people in Canada. Further, no studies have applied Ajzen's Theory of Planned Behavior (TPB) to determine the social and cognitive motivations of Aboriginal peoples to engage in physical activity. The purpose of this mixed method research was to determine the physical activity behaviors and motivations of a population of First Nation adults. Data collection consisted of the completion of the TPB questionnaire (N = 53) as well as focus group interviews (N=12) to determine the physical activity behaviors and belief-based perceptions, as per the TPB, of First Nation adults as they relate to engaging in physical activity. The research was conducted with participation of the Westbank First Nation, an Okanagan Nation band located near Kelowna, British Columbia. Quantitative analysis using hierarchical regression was used to determine the motivations of First Nation adults to engage in physical activity. Qualitative data analysis methods were used to construct themes representing motivations for physical activity common to the research participants. Results offer partial support for using the TPB to understand the motivations of Westbank First Nation adults. Further, Westbank First Nation adults have unique beliefs and meanings related to physical activity compared to the general population.

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Dedication

This thesis is dedicated to my mom, dad, brothers and closest friends. Thanks a bunch!

Chapter 1

Introduction

Physical inactivity has been associated with numerous health-related risk factors such as cardiovascular disease, obesity, diabetes, and some cancers (Pate et al., 1995; United States Department of Health and Human Services [USDHHS], 1996). Unfortunately, despite definitive research documents indicating the benefits of regular exercise (USDHHS, 1996), many Canadian adults remain inactive (Canadian Fitness and Lifestyle Research Institute [CFLRI], 2001). Statistics Canada (1999) in the Canadian National Population Health Survey reported that 55% of Canadian adults are considered inactive. Despite a decrease in physical inactivity levels from the 1980's through to the 1990's (Craig, Russell, Cameron, & Bauman, 2004), many Canadian adults still do not engage in enough regular physical activity to lower the risk of chronic disease and premature death (CFLRI, 2001; Statistics Canada, 1999). This is especially true for minority populations as they tend to have even higher physical inactivity levels (Jones et al., 1998).

Little physical activity literature exists for Aboriginal[1] populations (Denny, Holtzman, & Cobb, 2003; Fischer et al., 1999; Hay & Shephard, 1998; Myers, Kagawa-Singer, Kumanyika, Lex, & Markides, 1995; Wilcox, Castro, King, Housemann, & Brownson, 2000). As such, information regarding the physical activity behaviors and motivations of Aboriginal populations in Canada is incomplete. Based on the few studies that do exist regarding Aboriginals in North America, various populations show less than

[1] For the purposes of the introduction and review of the literature, the term Aboriginal will refer to all North American indigenous groups, including Inuit, Metis, Alaskan Native, Native American and Canadian First Nation populations.

ideal physical activity levels. Estimates have shown that as much as 62% of Aboriginal men and 65% of Aboriginal women are sedentary or perceive they have no leisure-time physical activity (Denny et al., 2003; Fischer et al., 1999; Goldberg et al., 1991; Sugarman, Warren, Oge, & Helgerson, 1992).

The importance of regular physical activity cannot be underestimated especially considering the current health status of Aboriginal populations in Canada. Currently, Aboriginal health in Canada lags behind that of the national population (Waldram, Herring, & Young, 1995). High or increasing rates of obesity (Broussard et al., 1995; Canada, 1999; Katzmarzyk & Malina, 1998; Story et al., 1999; Zephier, Himes, & Story, 1999), diabetes (Gohdes, Kaufman, & Valway, 1993; Harris et al., 1997; USDHHS, 2003), and cardiovascular disease (Anand et al., 2001; Harwell, Moore, McDowall, Helgerson, & Gohdes, 2003; Howard et al., 1999) are now commonplace in many Aboriginal communities. Further, the Health Canada document "A Second Diagnostic on the Health of First Nations and Inuit People in Canada" (1999) reports that a majority of First Nation and Inuit populations across Canada have a mortality rate that is 1.5 times higher than the national average.

Recent research suggests that physical activity has numerous beneficial effects on several detrimental health conditions including those prevalent in many Aboriginal communities. Physical activity has been found to be inversely associated with obesity (Trost, Owen, Bauman, Sallis & Brown, 2002) with further research suggesting that moderate increases in physical activity with a corresponding decrease in energy intake could prevent weight gain in a large portion of the general population (Hill, Wyatt, Reed, & Peters, 2003). Physical inactivity has been implicated as a major cause for diabetes

with physical activity reducing the mortality risk in those with diabetes (LaMonte, Blair, & Church, 2005). Finally, physical activity has been associated with reduced risk of cardiovascular disease including coronary heart disease, hypertension and stroke (Bauman, 2004). A limited but growing number of studies have found similar benefits in Aboriginal populations. Such research has shown that increased levels of physical activity in Aboriginal populations are positively associated with increased high density lipoprotein cholesterol and apolipoprotein AI levels which have a protective effect against coronary heart disease (Yurgalevitch, et al., 1998) and inversely associated with fasting insulin levels, (Irwin et al., 2000; Kriska, Hanley, Harris, & Zinman, 2001) lower mean BMI levels and percentage fat and fat mass (Esparza et al., 2000; Fitzgerald, Kriska, Pereira and deCourten, 1997).

Despite the documented health benefits of physical activity, the overall health of Aboriginal populations in Canada is worse than that of the general Canadian population. Any increase in the physical activity levels of Aboriginal populations will go a long way to closing this gap. Unfortunately, the irony remains that despite the need to improve the overall health of Aboriginal populations, they appear to receive little attention in the physical activity literature. The small amount of literature that does exist has shown less than optimal physical activity levels although inconsistencies are evident. Culturally biased and unvalidated measurement tools may not adequately capture the true physical activity behaviors of Aboriginal populations. Further, the diversity of Aboriginal populations warrants the development of measurement tools specific to that population.

Psychosocial models such as the Theory of Reasoned Action and Self-efficacy Theory have been employed in physical activity research extensively. However, the

number of studies utilizing such complete models with Aboriginal populations is inadequate. The Theory of Planned Behavior has never been used to assess the beliefs and motivations of Aboriginal populations to engage in physical activity despite the support it has received in reviews regarding its predictive ability in the physical activity domain.

In light of the limited Aboriginal physical activity literature that exists to date and considering the state of Aboriginal health in Canada as well as the numerous health benefits of regular physical activity, it is imperative to understand the physical activity behaviors and motivations of Aboriginal populations in Canada. Further, as the researcher is of Aboriginal decent, was born and raised in an Aboriginal community, is very physically active, and has had family members succumb to largely preventable diseases, research of this type is personally relevant.

Purpose

The major purposes of this mixed methods approach to researching the physical activity motivations and behaviors of an adult First Nation population are:

1. To determine the motivations of Westbank First Nation (WFN) Adults as they relate to engaging in physical activity as per the Theory of Planned Behavior (Ajzen, 1991).
2. Utilizing qualitative techniques to determine the behaviors and salient beliefs of WFN adults as they relate to engaging in physical activity.

Research Questions

1. What are the motivations of WFN adults as they relate to engaging in physical activity as per the Theory of Planned Behavior (Ajzen, 1991)?

2. What are the behaviors and salient beliefs (i.e. readily accessible social and cognitive perceptions) of WFN adults as they relate to engaging in physical activity?

Hypotheses

1. The constructs of attitude, subjective norm and perceived behavioral control as per the Theory of Planned Behavior will adequately predict WFN physical activity intentions and behaviors.
2. The exploratory, qualitative nature of the second purpose of this research suggests that no specific hypotheses can be generated. A tentative proposition, however, is that some physical activity behaviors that WFN adults engage in may not be similar to that of the general population. Also, some of the salient beliefs regarding physical activity of WFN adults will be different than that of non-First Nation populations.

Delimitations

1. The study was delimited to WFN band members over the age of 18 who were able to engage in physical activity if they wanted to.

Limitations

1. The Godin Leisure Time Exercise Questionnaire has never been extensively validated in First Nation populations (Harnack, Story, & Holy Rock,1999).
2. The age range (18-64 years) of the participants may not account for the differing physical activity patterns that occur at different times throughout the human life span. However, due to the small population from which to choose the sample, it

was necessary to increase the age range in order to ensure that an appropriate number of adults will participate.

3. The results will have limited generalization to a larger population other than to WFN adults.
4. Social desirability cannot be fully accounted for during the focus group interviews.
5. Individual perceptions may not be fully realized as a result of group dominance by another participant.
6. The presence of a focus group facilitator may affect the responses of participants.
7. Quality of the data is largely dependent on the interviewing skills of the facilitator.

Assumptions

1. Conducting focus group interviews is a valid method of obtaining accurate information from the participants.
2. Qualitative research "assumes that human beings are conscious, feeling, thinking, and reflective subjects and that people impute meanings about what is happening to them and how they interact with others" (Henderson & Ainsworth, 2001, p. 289).
3. Participants will answer the Theory of Planned Behavior questionnaire and focus group questions in an honest manner that accurately reflects their perceptions.

Operational Definitions

1. Adult – refers to any focus group participant 18 years of age or older.

2. Westbank First Nation Member – for the purposes of this study, refers to any participant who is a registered member of the aforementioned First Nation band.
3. Physical Activity Behavior- all leisure and non-leisure activities, including culturally specific activities, that conform to Health Canada's (2003) definition of physical activity.
4. Motivations – those social and cognitive factors that impel an individual to engage or not engage in physical activity.

Chapter 2

Review of the Literature

The following review of the literature has been divided into several sections. First, an overview of the measurement issues in Aboriginal health research is presented. The second section consists of a discussion on psychosocial models and constructs used in physical activity research with an emphasis on the use of the Theory of Planned Behavior. Finally, the third section discusses ethical issues related to Aboriginal research.

Measurement Issues

The prevalence of physical inactivity in Aboriginal populations is a definite cause for concern. However, not only is more research needed to document the physical activity behaviors of Aboriginal populations, but research that uses culturally appropriate measurement tools. Several physical activity studies, many of which involve minority women, indicate the need for culturally sensitive and gender neutral measurement tools (Eyler et al., 1998; Henderson & Ainsworth, 2000a; Kriska et al., 1990; Mâsse et al., 1998; Stevens et al., 1999). Moreover, some of the existing measurement tools, although culturally neutral, need further validation in Aboriginal populations (Fischer et al., 1999; Hay & Shephard, 1998). For example, Harnack et al. (1999) concede that the culturally neutral Godin and Shephard (1985) leisure-time exercise questionnaire used in a Lakota First Nation sample has not been validated in Aboriginal populations. Despite the culturally inappropriate nature of several measurement tools, some researchers have attempted to develop or modify existing tools in order to address this problem (Going et al., 1999; Harnack et al., 1999; Hay & Shephard, 1998; Kriska et al., 1990; Stevens et al.,

1999). Unfortunately, validation of these modified tools in Aboriginal populations and further development for others is still required (Harnack et al., 1999; Hay & Shephard, 1998; Stevens et al., 1999). Ideally, to accurately assess the physical activity behaviors of various minority populations, measurement tools need to be tailored to the cultural and traditional lifestyles of the target population.

A culturally appropriate measurement tool is one that has a more inclusive definition of physical activity. Ainsworth, Irwin, Addy, Whitt and Stolarczyck (1999) acknowledge that surveys can vary in their definitions of physical activity. Existing measurement tools and the restrictive physical activity definitions associated with them limit generalizations that can be made about various target populations (Whitt, Levin, Ainsworth, & Dubose, 2003). In contrast, the definition of physical activity provided by Health Canada (2003) is very inclusive. Physical activity is defined as "all leisure and non-leisure body movement produced by the skeletal muscles resulting in an increase in energy expenditure" (Health Canada, 2003). If all leisure and non-leisure body movement is considered, physical activity can include walking a child to school, vigorous housework, and gardening among other activities. In a study by Ainsworth, Richardson, Jacobs and Leon (1993), it was shown that physical activity levels between men and women varied when household activities were included. Women engaged in more physical activity per day than their male counterparts when activities around the home were included (Ainsworth, Richardson, Jacobs, & Leon, 1993). When such activities were not included, it was found that men engaged in more physical activity per day (Ainsworth et al., 1993). Measurement tools that provide restricted definitions of

physical activity may not measure the culturally specific or gender specific behaviors of a given population and thus the results of physical activity measurements are obscured.

Regardless of the type of measurement tool being used, the diversity of the Aboriginal populations in Canada must also be taken into consideration. The traditions and cultural activities may vary from location to location. Thus, researchers need to be sensitive to the traditions and culture of the target population (Mâsse et al., 1998). Pilot work to test the reliability and validity of existing measurement tools or to further develop culturally appropriate tools allows for more accurate measures of physical activity behavior.

Psychosocial Constructs/Models

As stated previously, relatively little physical activity literature exists for Aboriginal populations. However, even less research employs psychosocial models to explain Aboriginal physical activity motivations. The following is a review of the most commonly used models and constructs as they apply to physical activity research in Aboriginal populations and they include Self-efficacy and the Stages of Change. Included will be an overview of the history of the attitude construct as well as an overview of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Although no Aboriginal physical activity research has applied either the TRA or TPB, discussion will highlight the importance of such models in explaining physical activity motivations and the subsequent need for such models to be applied to Aboriginal populations.

Self-efficacy

Self-efficacy is the perceived confidence in one's ability to perform a given behavior successfully (Bandura, 1977). According to self-efficacy theory, if an individual perceives they can perform a behavior successfully, the more likely it is that they will engage in that behavior (Bandura, 1977). Thompson, Wolfe, Wilson and Perez (2003) found that self-efficacy was significantly associated with physical activity status in Aboriginal women from the American southwest. Those women who were confident they could engage in more physical activity were almost two times as likely to meet physical activity recommendations and more than three times as likely to be at least insufficiently active (Thompson, Wolfe, Wilson, Pardilla, & Perez, 2003). Brunet, Plotnikoff, Raine and Courneya (2005) found that self-efficacy was not significantly correlated with physical activity in a sample of Aboriginals with type 2 diabetes. Despite the fact that their findings were not significant, the association was indicative of a small effect size (Cohen, 1992). Although self-efficacy has been found to be a consistent correlate of physical activity and one of the most validated social cognitive constructs used to explain exercise behavior (Biddle & Nigg, 2000; Keller, Fleury, Gregor-Holt & Thompson, 1999), it has seen extremely limited use in physical activity research with Aboriginal populations.

Stages of Change Model

An integral component of the Transtheoretical Model (TTM) is the Stages of Change Model which hypothesizes that individuals progress through five stages of behavioral change: precontempalation, contemplation, preparation, action and maintenance (Prochaska & Marcus, 1994). In relation to physical activity, those

individuals in the precontemplation stage do not engage in a physical activity and do not intend to start (Prochaska & Marcus, 1994). Those in the contemplation stage do not currently engage in physical activity but intend to start in the next six months (Prochaska & Marcus, 1994). Those in the preparation stage are currently engaged in physical activity but not regularly (Prochaska & Marcus, 1994). Those in the action stage are engaging in regular physical activity but have done so for less than six months (Prochaska & Marcus, 1994). Finally, those in the maintenance stage are engaging in regular physical activity and have done so for more than six months (Prochaska & Marcus, 1994). It is suggested that individuals do not progress through the stages in a linear fashion (Plotnikoff, Hotz, Birkett, & Courneya, 2001). Individuals tend to cease their behaviors or regress to earlier stages (Plotnikoff et al., 2001). One of the features of the model, as Plotnikoff and colleagues (2001) point out, is that "by distinguishing people vis-a-vis readiness to change, the model identifies the particular requirements of each stage and thus the nature of interventions that will be relevant at different points in the change process" (p. 442).

The TTM also incorporates the concepts of self-efficacy, decisional balance and processes of change (Prochaska & Marcus, 1994). As individuals progress through the stages, self-efficacy tends to increase (Marcus & Simkin, 1994). Decisional balance is an individual's perceptions of the 'pros' and 'cons' of progressing to a new stage or staying at a given stage (Prochaska & Marcus, 1994; Prochaska & Velicer, 1997). The 'cons' tend to outweigh the 'pros' in the early stages of change whereas the 'pros' tend to outweigh the 'cons' in the later stages (Prochaska & Velicer, 1997). Processes of change are the strategies individuals use to progress through the stages (Plotnikoff et al., 2001).

To date, only three studies make use of the Stages Model in Aboriginal physical activity research. Bull, Eyler, King and Brownson (2001) sought to assess the stage of readiness to exercise and stage of readiness to be physically active in a sample of ethnically diverse women over the age of 40. In a sample of Aboriginal women it was found that 27.6% were in the precontemplation stage, 18.8% were in the contemplation stage, 5% were in the preparation stage, 5.6% were in the action stage and 43% were in the maintenance stage of readiness to exercise (Bull, Eyler, King, & Brownson, 2001). In terms of readiness to be physically active, 11.4% were in the precontemplation stage, 5.6% were in the contemplation stage, 3.9% were in the preparation stage, 3.6% were in the action stage and 75.4% were in the maintenance stage (Bull et al., 2001). The definition of physical activity was more inclusive than that of exercise. Thus, the percentage of those women in the maintenance stage of readiness to be physically active was far greater than the percentage of those women in the maintenance stage of readiness to exercise. Bull et al. (2001) also found that Aboriginal women were less likely to be in the maintenance stage of readiness to exercise and readiness to be physically active than their other counterparts.

In another study, Heesch, Brown and Blanton (2000) sought to determine if there were differences in the perceived barriers to exercise among ethnically diverse women at the same stage of exercise and those at an adjacent stage. It was found that the Aboriginal women in the precontemplation stage perceived being too tired, bad health, lack of energy and lack of time as barriers to exercise (Heesch, Brown, & Blanton, 2000). Aboriginal women in the contemplation stage perceived lack of energy, lack of time, and being too tired as barriers to exercise. Women in the preparation and active stages

perceived lack of energy, being too tired, and lack of time as barriers to exercise (Heesch et al., 2000).

Finally, Stolarczyck et al. (1999) sought to determine the knowledge, attitudes and behaviors related to exercise in Native Americans with diabetes from New Mexico. The authors used the model to determine the relative stage of exercise readiness of the participants. The results indicated that only 1.5% of the participants were in the precontemplation stage, 16.1% were in the contemplation stage, 27.8% were in the preparation stage, 34.6% were in the action stage and 20% were in the maintenance stage of readiness to exercise. It is evident that a majority of these participants were doing at least some exercise. These findings are not unlike those of Bull et al. (2001) with the exception that despite using the more restrictive definition of exercise, the Native Americans with diabetes were still more active than not active at all (Stolarczyck et al., 1999). Despite limited use of the Stages Model with Aboriginal populations, there have been no studies that utilize the complete TTM to explain Aboriginal physical activity behavior.

Attitude

Like self-efficacy, the attitude construct has long been an important factor for understanding human behavior. Much of the work in attitude-behavior research has been focused on determining the efficacy of attitudes in predicting behavior (Ajzen & Fishbein, 2005). Early attitude research showed that attitudes were poor predictors of behavior (Ajzen & Fishbein, 2005). However, such results were often refuted as many psychologists sought to maintain the integrity of the attitude construct (Ajzen & Fishbein, 2005). Response bias on attitude measures and the multi-dimensional nature of attitudes

were often cited as reasons for its poor predictive nature (Ajzen & Fishbein, 2005). Thus, psychologists sought to improve existing attitude measures, but unfortunately, these attempts were not wholly successful (Ajzen & Fishbein, 2005). As early research progressed, it was found that when behaviors are aggregated, that is, combining behaviors to represent a behavioral domain, the relations between general attitudes and general behaviors began to surface (Ajzen & Fishbein, 2005). However, these aggregated measures were not successful in predicting specific behaviors (Ajzen, 1991; Ajzen & Fishbein, 2005).

Perhaps the most important progression in attitude research was the development of the principle of compatibility (Ajzen, 1988; Ajzen & Fishbein, 1977). The principle states that in order to predict a given behavior from attitudes, both measures should involve the same elements. Those elements include target, context, action and time (Ajzen, 1991). For example, to predict a specific exercise behavior like jogging from attitudes, assessment might be in terms of attitude towards jogging at school on the track for 30 minutes, three days a week in the next month. The target could be the school, the action could be jogging, the context could be the track and the time could be 30 minutes, three days a week in the next month. The predicted behavior in question would also have to be assessed in terms of jogging at school on the track for 30 minutes, three days a week in the next month. Ajzen & Fishbein (2005) state that "Empirical research has shown that specific behaviors can be predicted quite well from compatible measures of attitude toward the behaviors in question" (p. 27). Thus, the principle of compatibility helped alleviate the debate regarding the predictive ability of attitude.

Expectancy-Value

The shaping of attitudes can be explained in terms of the expectancy-value model. The model posits that individuals shape their beliefs about a behavior by associating it with certain characteristics or attributes (Ajzen, 1988). The more positive the characteristics, the more likely an individual will develop a positive attitude toward the behavior (Ajzen, 1988). The more negative the characteristics, the more likely an individual will develop a negative attitude toward the behavior (Ajzen, 1988). According to the model, "the subjective value of each attribute contributes to the attitude in direct proportion to the strength of the belief, i.e. the subjective probability that the object has the attribute in question" (Ajzen, 1988, p.32). Therefore, attitude is proportional to the belief strength and subjective value. It is possible then, to have two individuals who believe that exercise is good for them, but because of differences in belief value the resulting attitudes toward the behavior in question may vary.

Although it is common practice to measure the expectancy-value relationship in physical activity research, it has been shown that use of both expectancy and value measures may not add to the shaping of attitude any more than using a single belief-based measure of either expectancy or value (Gagne & Godin, 2000). Further, despite the history of debate, the attitude construct remains an important part of predicting behavior. Indeed, the attitude construct plays and integral role in two popular theoretical models currently being used in physical activity research, the Theory of Reasoned Action (Ajzen & Fishbein, 1980) and the Theory of Planned Behavior (Ajzen, 1988).

Theory of Reasoned Action

According to the Theory of Reasoned Action (TRA), intentions are the primary determinants of behavior (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). That is, individuals generally engage in behaviors that they intend. Intentions essentially encapsulate an individual's motivation to engage in a given behavior and are determined by attitude and subjective norm (Ajzen, 1991). Attitude refers to an individual's attitude toward a behavior, whereas subjective norm refers to the perceived social pressure to engage in a behavior (Ajzen & Fishbein, 1980).

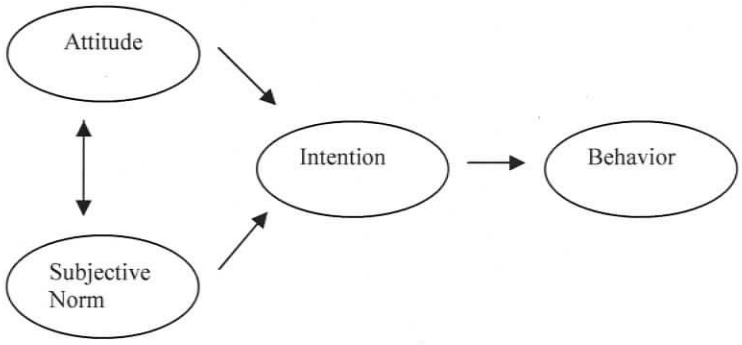

Figure 1. Theory of Reasoned Action

Both attitude and subjective norm are shaped by salient beliefs (Ajzen & Fishbein, 1980). Salient beliefs are those beliefs that are readily accessible and easily attended to by an individual (Ajzen & Fishbein, 1980). Behavioral beliefs shape an individual's attitude toward a behavior and normative beliefs shape the subjective norm associated with a behavior (Ajzen & Fishbein, 1980). Behavioral beliefs are those beliefs about the possible outcomes of a behavior and the positive or negative evaluations of the consequences of that behavior (Ajzen & Fishbein, 1980). Normative beliefs are those

beliefs about what significant others in an individual's life think about that individual engaging or not engaging in a behavior as well as the motivation to comply with these pressures (Ajzen & Fishbein, 1980). Generally, the more favorable the attitude and subjective norm, the more likely an individual will intend to engage in a given behavior (Ajzen & Fishbein, 1980). The TRA is used to explain behavior that is under volitional control (Ajzen & Fishbein, 1980).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is an extension of the TRA. Similar to the TRA, the TPB hypothesizes that attitude and subjective norm, shaped by behavioral and normative beliefs, determine intention (Ajzen, 1991). However, unlike the TRA, the TPB also incorporates the construct of perceived behavioral control (PBC). PBC refers to the perceived level of ease or difficulty of engaging in a behavior (Ajzen, 1991). PBC is shaped by control beliefs which refer to the perceived existence of factors, such as self-efficacy beliefs, that enable or inhibit an individual from engaging in a behavior (Ajzen, 1991). It was adopted primarily based on the successful research by Bandura (1977) that showed the predictive ability of self-efficacy in physical activity research (Ajzen, 1991). PBC is postulated to act as a proxy for actual control (Ajzen, 1991). Thus, PBC can predict behavior to the extent that it reflects actual control, an aspect that the TRA is unable to do.

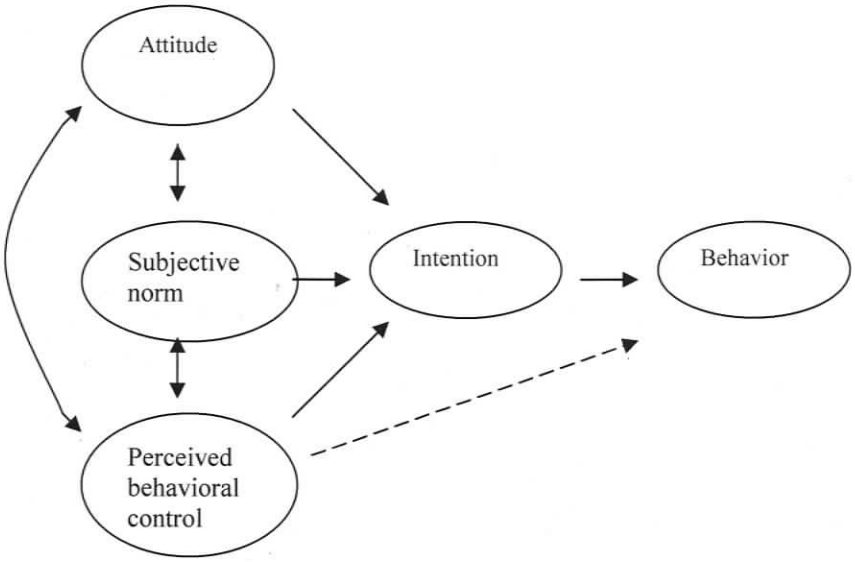

Figure 2. Theory of Planned Behavior

Reviews on the predictive ability of the TRA and TPB in exercise research have been supportive. Such reviews have shown that attitude has generally been more predictive of intentions to exercise than subjective norm (Blue, 1995; Dzewaltowski, Noble, & Shaw, 1990; Hagger, Chatzisarantis, & Biddle, 2002). Social pressures appear to exert less influence on exercise intentions than attitude as is evidenced by non-significant correlations and smaller effect sizes for both the TRA and TPB (Blue, 1995; Hagger et al., 2002). When perceived behavioral control is added to attitude and subjective norm, a significant increase in the prediction of exercise intention results (Blue, 1995; Hagger et al., 2002). Blue (1995), Dzewaltowski et al. (1990) and Hagger et al. (2002) all reported that intentions were predictive of exercise behavior. Mixed results were found when trying to predict exercise behaviors from perceived behavioral control (Blue, 1995), although Armitage and Conner (2001) found that perceived behavioral

control independently predicted behavior in a range of domains, not specifically exercise. Overall, the TPB has been shown to be a better model in explaining a greater amount of variance in exercise behavior (Hagger et al., 2002).

As stated previously, self-efficacy as well as the attitude construct have been very important for understanding behavior, exercise behavior notwithstanding. Hagger et al. (2002) reaffirm the importance of attitude when they state in their review that "The present analysis suggests that after accounting for statistical artifacts, people's attitudes, and to a lesser extent perceived behavioral control,...seem to be the key influences in forming intentions to participate in physical activity" (p.25). To date, no research concerning Aboriginal physical activity behaviors has employed the TRA or the TPB.

Beliefs and the TPB

Beliefs play an integral role in the TPB model. People often have several beliefs regarding a given behavior, but can only access a limited number of these beliefs at any moment in time (Miller, 1956). These beliefs are presumed to guide behavior (Ajzen, 2002). As per Ajzen (2002), to access these beliefs, individuals are asked a series of free response questions that attempt to elicit their behavioral, normative and control beliefs. Once these beliefs have been determined, a standard TPB questionnaire can be designed that measures attitudes, subjective norms and perceived behavioral control directly (Ajzen, 2002). It also includes measures that assess behavioral beliefs (Ajzen, 2002). By measuring such beliefs, we gain an understanding of the "cognitive foundation" of why people have various attitudes, subjective norms, and perceptions of control (Ajzen, 2002, p. 2). Once it is understood why people hold such beliefs, interventions can be designed to change these beliefs which in turn may change behavior (Ajzen, 2002). There is

evidence to suggest that salient beliefs about physical activity can vary by ethnicity (Blanchard et al., 2003). No research has been undertaken that attempts to understand Aboriginal beliefs, as per the TPB, regarding physical activity.

Aboriginal Research and Ethics

Historically, Aboriginal people in Canada have been subject to assimilationist policies characterized by loss of traditional lands, restrictions on cultural practices, forced residential schooling, and the loss of language and religion (Indian and Northern Affairs Canada, 1996). As a result, a history of distrust of between Aboriginal peoples and non-Aboriginal institutions is not surprising. Research initiated by non-Aboriginal scholars has done little to alleviate this distrust. Indeed, past research with Aboriginal peoples has often been racially biased, oppressive and exploitive in nature (Castellano, 2004, Norton & Manson, 1996). It must be made abundantly clear to future researchers who intend on working with Aboriginal communities that Aboriginal people take very seriously the passing of knowledge on to others. As Castellano (2004) reaffirms, "Knowledge is not a commodity that can be purchased and exploited at will" (p. 104). In order for trust to be reestablished, researchers must acknowledge and work from the perspective of Aboriginal self-determination (Schnarch, 2004). That is, in its most basic conception, Aboriginal control over Aboriginal issues. This includes any research that is undertaken with Aboriginal communities (Schnarch, 2004). Ideally, research should be initiated with an invitation from an Aboriginal community (Ball, 2005). However, appropriate consultations and introductions should be sought if research is initiated by someone outside of the community, Aboriginal or otherwise (Ball, 2005). Ultimately, health

research with the participation of Aboriginal communities must specifically acknowledge self-determination and the principles that are inherent in this process.

The major issues to be discussed related to research with Aboriginal communities are based on what Schnarch (2004) calls the principles of ownership, control, access and possession. Ownership refers to the idea that Aboriginal communities collectively own the knowledge that is provided to and for others (Schnarch, 2004). Any knowledge that is generated reflects upon the community as a whole, not merely the participants. Therefore, the researcher must be aware of the implications of any of the information that is to be published or presented. Ownership implies that the Aboriginal community involved has the right to withdraw any information given by a participant that may be perceived as detrimental to the community. Control refers to the rights of Aboriginal communities to actively engage in and have jurisdiction over the research process from beginning to end (Schnarch, 2004). This implies that the Aboriginal community in question is an equal partner in the research process and not merely passive subjects or participants. As such, researchers must be flexible. If the methods contradict cultural norms or beliefs, the community reserves the right to suggest or make changes as they see fit. Access refers to the rights of Aboriginal communities to have access to any of the data that are collected and the knowledge that is generated at all times, including after the research process has been completed, regardless of where such information is stored (Schnarch, 2004). Finally, possession refers to the idea that any Aboriginal community has the right to maintain possession of the data and knowledge that is generated as a result of the research process (Schnarch, 2004). As Schnarch (2004) comments, "…possession (of data) is a mechanism by which ownership can be asserted and

protected" (p. 81). Accordingly, Aboriginal communities maintain the right to withhold any information that may misrepresent or may be damaging to the community's well-being.

Researchers should recognize the rights of Aboriginal communities to exercise and amend these principles as they see fit. The principles discussed here are only guidelines. Indeed, researchers must engage in meaningful dialogue with the Aboriginal community of interest to establish research protocols. However, these principles go a long way to reaffirming Aboriginal rights to self-determination. For a more detailed discussion of the issues associated with Aboriginal research refer to Castellano (2004), Indian and Northern Affairs Canada (1996), and Schnarch (2004). Once researchers begin to recognize and abide by these principles, a rebuilding of trust will hopefully ensue. Self determination and the principles associated with it are a means for Aboriginal communities to emancipate themselves from the historically paternalistic research structure that only reinforces the marginalization of Aboriginal people in Canada.

Summary

Despite the documented health benefits of physical activity, the overall health of Aboriginal populations in Canada is worse than that of the general Canadian population. Any increase in the physical activity levels of Aboriginal populations will go a long way to closing this gap. Unfortunately, the irony remains that despite the need to improve the overall health of Aboriginal populations, they appear to receive little attention in the physical activity literature. The small amount of literature that does exist has shown less than optimal physical activity levels although inconsistencies are evident. Culturally biased and unvalidated measurement tools may not adequately capture the true physical

activity behaviors of Aboriginal populations. The diversity of Aboriginal populations warrants the development of measurement tools specific to that population. Finally, very little research has attempted to understand the social and cognitive motivations of Aboriginal populations to engage in physical activity.

Chapter 3

Methods

Site Selection

The research site was the Westbank First Nation (WFN) community. The WFN chief and council and the recreation department coordinator expressed an interest and a willingness to collaborate in this research endeavor (Appendix A). The WFN is located in south central British Columbia on the west side of Okanagan Lake adjacent to the city of Kelowna which is one of the fastest growing cities in Canada. The WFN has 557 members and is one of seven First Nation communities that make up the Okanagan Nation. The name characterizes their use of the Okanagan language which is shared by the seven communities. The proximity of the WFN to Kelowna, one of the largest cities in the BC interior, is indicative of the access that the community has to various physical activity opportunities. Along with the opportunities that arise out of being located near a major city, the WFN has had the privilege to construct a full recreational facility that includes a full size gymnasium, weight room, softball stadium, soccer field and an outdoor ball hockey rink all of which are located on the main WFN subdivision. The facility is run by a full time recreation coordinator and programmer. Numerous recreation programs are offered for the community including traditional dancing instruction, martial arts programs, basketball, indoor ball hockey leagues as well as many other activities. The opportunities for the WFN community members to be active are widely available. Despite these opportunities, no known study dealing with the physical activity behaviors and motivations to engage in physical activity has been conducted with this community.

Situating the Author in Relation to the Participants and Research

I am of First Nation decent and was born in Kelowna, British Columbia, Canada. The majority of my youth was spent growing up in and as apart of the WFN community. My parents have always been physically active. My mom is an avid softball player and my dad is a sports fanatic, the passion for which he has passed on to me. When he moved to Canada from the Philippines, he excelled at football and basketball in high school and still plays basketball to this day. He and my mom registered me in my first organized sport, soccer, at five years old. From that moment on I played anything and everything I could. Year after year, my parents continued to provide the opportunities for me to do the things that I loved despite being, what could be considered, a lower income family. Their support was unwavering. Any chance that I got to be active, away from organized sport settings, I took. Whether it was riding my bike, going swimming at the lake or tobogganing in the winter I was always active. As I grew older, the support that the WFN gave me was also instrumental. They provided me with the opportunity to go on and play university soccer and helped fund my university career the result of which was a degree in secondary education. Today, I still consider myself an active person. I weight train, play soccer, golf and ski whenever I have the opportunity.

The fact that I am from the WFN community has allowed me to establish a trusting relationship with the community members and the participants. This trust has been built up throughout many years of attending community meetings, volunteering as a youth basketball coach and working as an acting principal and vice principal for the WFN community elementary school on several occasions. Much of my history has determined why I chose to pursue a Master's Degree in Kinesiology with an emphasis in Exercise

Psychology. I hope to one day give back to my community for all of the support they have given me. Truth be told, I do not have much experience with qualitative or quantitative research. However, all researchers have to start from the beginning, wherever and whenever that may be. As such, the research I am conducting now is a learning process. This learning process is enhanced by: 1) guidance from those who have many more years experience than me and, 2) my passion for this area of research. This is what motivates me to present a thesis that represents integrity and is worthy of those WFN community members who have participated in the research process.

Participants

Purposive sampling was used to recruit at least 36 First Nation men and women 18 years of age or older from the WFN. A power analysis was used to determine the minimum number of participants that would be needed in order to possibly achieve significant results. Due to the small population from which to recruit, a large age range was necessary in order to meet the desired minimum sample size. This sample selection was congruent with Aboriginal research guidelines as established by Indian and Northern Affairs Canada (1996) via their Royal Commission on Aboriginal Peoples which states that "In community-based studies, researchers shall ensure that a representative cross-section of community experiences and perceptions is included" (Volume 5, Appendix E). Some members belonging to the WFN do not live near or on the community reservation, therefore, every effort was made to ensure that such individuals were excluded from the population from which to recruit. Preferably, only those individuals who live in or near the WFN community were potential participants.

Justification of Sample Size

Predicting intention:

N=36, three independent variables (attitude, subjective norm, perceived behavioral control), power = .80, alpha = .05, effect size f squared = .35 (based on Hagger et al., 2002).

Predicting behavior:

N = 36, two independent variables (intention and perceived behavioral control), power = .80, alpha = .05, effect size = .30.

Focus Group Size:

Is dependent on the point at which saturation has been achieved. That is the point at which responses become repetitive for each of the questions.

Procedure

A meeting with the appropriate representatives of the WFN was the first priority. The WFN representatives determined that a meeting was not necessary but were provided with any information that they needed regarding the research project. As First Nation communities reserve the right to self-determination, they also reserve the right to actively and equally participate in any research that concerns them. The WFN were provided with the opportunity to raise any concerns that they had regarding the research process. An open and honest dialogue was emphasized on the part of the researcher. Ethical approval was obtained from the University of Victoria Human Research Ethics Committee and the Westbank First Nation community.

The data were collected during the fall of 2005 through to the spring of 2006. Prospective participants were prescreened to ensure that they were members of the WFN. This was done by asking an official of the WFN to create a mailing list of all WFN members. The list was further trimmed to ensure that only those individuals over the age of 18 were included. Once the mailing was finalized, the participants were sent the mail-out survey by the WFN Recreation Department. Included with the questionnaire were the appropriate participant information and consent forms, both of which were to be read prior to the questionnaire itself (Appendix B). In the consent process, the parameters for participation were explained which included a statement that only those who are able to be physically active if they chose to were to complete the survey. A copy of the participant information and consent form was left with the participant. By returning the questionnaire it was understood that the participants had given consent to participate. Once they completed the survey they were asked to use the envelope provided and return the survey to the researcher. The return envelope was prepaid so the participants do not have to provide the postage. If prospective participants wished to take part in focus group discussions at a later date they were asked to indicate their interest by answering the appropriate question at the end of the survey. Participants were required to provide contact information if they wished to further volunteer their time.

Considering the researcher had no access to the WFN mailing list, it is possible that an insignificant number of surveys may have been completed by participants living outside of Canada. As a result of the inclusion criteria 359 WFN adults were potential participants. Of those, 17 unopened survey packages were returned citing an incorrect mailing address or that the individual had moved and two were returned but not

completed. Therefore the final population from which potential participants were selected was 340. The number of surveys returned, completed and fit for analysis was 53 indicating a 16% return rate.

As a third party, the recreation department coordinator and recreation programmer were the only people privy to the mailing list. The participants were not required to disclose their names unless they agreed to participate in the focus groups. Once the survey was returned, the researcher was not able to attribute any one survey to any one participant. As such, the survey portion of the research was anonymous and any data provided by a participant could not be removed once the survey was returned. Anonymity procedures were explained to the participants in a participant information and consent form. Anonymity was maintained for those participants who chose to remain anonymous. Participants' personal identifiers were removed and were not referred to by name in the results or discussion.

Gift giving is not an uncommon practice in First Nation communities especially concerning the exchange of knowledge. In order to maximize the number of responses to the research survey, a second round of surveys was sent out in exactly the same way as the first. That is, a strict adherence to anonymity procedures as outlined previously. However, the WFN was consulted in order to determine if it was possible for the researcher to donate money to the WFN Recreation Department based on the number of surveys that were returned by WFN band members. Specifically for every survey returned, the researcher proposed to donate $5 to the WFN Recreation Department for youth based initiatives. Participants were informed of this by a notice attached to the second round of surveys (Appendix C). In this way, the participants were not personally

benefiting for their participation in the study. In no way was this anything more than adhering to traditional gift giving custom.

Information in the mail-out package asked if the participants were willing to further volunteer their time in focus group discussions. The potential number of those recruited for the focus group discussions depended on whether they chose to consent to further discussions. This was done with a specific question contained in the original mail-out questionnaire. A part of the prescreening process prior to the commencement of the focus groups was to inquire about participants' current physical activity levels. In the survey, they were asked to determine their average weekly physical activity over the past month. This was done to ensure that focus groups were formed in a somewhat homogenous fashion in an effort to alleviate response bias. To further enhance homogeneity, the participants were asked their age and gender so that they could be assigned to focus groups with similar participants. As Greenbaum (1998) writes, "the more homogenous the group is, the better the participants will relate to each other and the higher the quality of the input they will generate" (p. 62). For example, an individual who is physically inactive may not respond freely to questions about their physical activity behaviors when they are grouped with individuals who are extremely active. Or, physically inactive individuals may seek social desirability and answer in ways that inflate their physical activity levels.

Once surveys were returned to the researcher and several participants had indicated that they were interested in further volunteering their time for the focus groups, they were later contacted via the personal contact information they provided in order to determine a suitable time to meet. Three focus groups were arranged. The first focus

group consisted of four individuals, the second five and the final group consisted of three individuals for a total of 12 WFN members participating in the focus groups discussion. For the first two groups, the meeting place was the WFN community centre complex which is located on the main subdivision where many of the community members live. The last focus group met at one of the participant's homes because of babysitting concerns. This provided comfortable, familiar, and easily accessible surroundings for each of the meetings. The meeting times were scheduled in the evenings to accommodate work schedules. Due to the nature of conflicting schedules and availability schedules, focus groups were not as homogenous as was hoped, although every effort was still made to group participants based on their similarities.

Prior to each focus group meeting, the participants were offered snacks and refreshments as a gesture of gratitude. The participants were given a Research Project Information and Consent Form specific to the focus groups and were asked if they had any questions about the research. Ongoing consent was provided by having the participants sign the consent forms and were offered a copy to keep. In order to reflect the traditions of the WFN people, the participants were situated in a circle. The researcher then facilitated the focus groups which lasted between 45-60 minutes in length.

The impetus for qualitative research in First Nation populations is supported in the literature (McDonald & McAvoy, 1997). First Nation peoples have traditionally relied heavily on oral histories to educate and to communicate values and beliefs. As such, "This makes many traditional social science research methods rather inappropriate in Native American communities, and would suggest that qualitative and interpretive

methodologies would be more appropriate" (McDonald & McAvoy, 1997). Further, as Castellano (2004) states:

> Research that seeks objectivity by maintaining distance between the investigator and informants violates Aboriginal ethics of reciprocal relationship and collective validation…Attempts to gain an understanding of Aboriginal life and concerns from an objective, short-term, outsider vantage point have produced much research that Aboriginal Peoples reject as distortions of their reality (p. 105).

Therefore, in an attempt to maintain this reciprocal relationship and collective validity, qualitative methods undertaken by First Nation researcher were an integral part of this research project. Further, it has been suggested that due to the overwhelming absence of women and minorities in physical activity research as well as the use of measurement tools developed from non-minorities in Western cultures there is a need to determine the attitudes, meanings and experiences that women and minorities have regarding physical activity (Im, 2001; Seefeldt, Malina & Clark, 2002).

An assistant from the Recreation Department was present during the focus groups to ensure the interviews were audio-taped and notes were taken. The participants were supplied with a copy of the focus group questions prior to the start of each interview session. This enabled the participants to refer to the questions at any time during the discussion. The participants were reminded that personal identifiers will be removed and that their anonymity will be maintained when the results are reported. However, it is not uncommon for First Nation participants to want to have their identity revealed as a part of focus group discussions, especially concerning specific quotations within the results section of the research paper. It is a matter of exercising their right to be heard in the face of past experiences with non-First Nation institutions and research and claiming ownership of the knowledge that is generated. A consent form was made available if the

participants wished to be quoted selectively by name in any reports, presentations or recommendations. Questions that elicited responses related to physical activity behaviors were asked first. Then, questions that elicited responses related to the salient beliefs related to engaging in physical activity were asked next. To ensure data quality, the interviewer made sure the discussion remains on topic and focuses on the research questions (Marshall & Rossman, 1989). Interview responses were recorded via audiotape with the permission of the participants.

Once the completed surveys had been returned and all the focus group information was collected, all data were kept in a locked cabinet in the Behavioral Medicine Research Laboratory at the University of Victoria. As First Nation communities have the right to self-determination, any data that was gathered and any knowledge that was generated is subject to ownership, control, access and possession rights of the community as outlined in the Chapter 2. Confidentiality procedures for the survey and focus group discussions were explained to the participants in a Participant Information and Consent Form

Instrumentation

Physical activity was defined as per Health Canada (2003) which is "all leisure and non-leisure body movement produced by the skeletal muscles resulting in an increase in energy expenditure." The rationale is that physical activity is more than just exercise (e.g. planned activities to improve health) and leisure activities (e.g. activities chosen during one's free time). Further, the concept of leisure can be difficult to conceive of for minority women for they often perceive that they have no leisure-time (Eyler et al., 1998; Mâsse et al., 1998). Thus, to accurately capture the physical activity behaviors of First

Nation adults, it is imperative to include all activity that conforms to Health Canada's definition. Masse et al., (1999) state:

> There is a need to emphasize moderate activities, such as those that involve carrying, lifting, and pushing objects. Some examples include carrying a child or grandchild, unloading groceries from a car or walking them home in a cart, or doing laundry. Such activities promote increased muscle mass, skeletal strength, and joint flexibility. Surveys have not measured these activities well in the past. Surveys should also reflect the cultural interests and physical activities of the respondents (p. 62).

Therefore, included in the information and consent forms and the survey itself and prior to each focus group session, the participants were informed of the definition of physical activity. They were also given examples of physical activity including those that are specific to their culture and traditions.

Survey Instrumentation

The GLTEQ and a questionnaire based on the TPB were the instruments used in the main analyses (Appendix D). The GLTEQ has been sufficiently validated in non-First Nation populations and is used as tool to measure the number of times, the average duration and the relative intensities of physical activities that individuals engage in (Godin & Shephard, 1985). Jacobs, Ainsworth, Hartman, and Leon (1993) found that the GLTEQ was just as valid as several other survey tools in assessing levels of physical activity. Moreover, the nature of the GLTEQ is such that it can be modified depending on the population of interest. To increase its validity, the GLTEQ was modified to include physical activities that were thought to be specific to First Nation peoples such as pow wow dancing. The TPB has been well-validated in large population based research initiatives (Armitage & Conner, 2001; Hagger et al., 2002).

Exercise was assessed using the GLTEQ which assesses the frequency of mild, moderate and strenuous exercise performed for at least 10 minutes or longer during work, at home or during their free time. Each intensity level was accompanied by examples including those that might be traditional in nature. Participants were asked to recall their average weekly physical activity over the past month as well as the average duration of every bout as they related to each intensity level. The responses were then analyzed to determine how much of the participants' physical activity level conformed to Health Canada's recommendation for physical activity which states that regular physical activity is any physical activity that is performed at least four times per week, for at least 30 minutes in length each time at a moderate intensity (Health Canada, 2003). It is presumed that optimal health benefits will occur at this level of intensity and for this duration (Health Canada, 2003). Participant responses were then scored to reflect how much of their activity met the aforementioned guidelines the results of which were then used as the dependent variable for further analyses.

Measures based on the TPB were used to determine participant psychological and social motivations for engaging in physical activity. As per Ajzen (2002), several items were used to measure each construct and responses to each item were rated on 7-point bipolar adjective scales. Each set of items was presented together representing a block of questions specific to a given TPB construct. The blocks of items were presented to the participants in the order of attitude, subjective norm, PBC and intention. Cronbach's alpha statistics were computed to determine the internal reliability of the items used for each construct.

Intention was assessed by three items. The first item asked: "How motivated are you to engage in regular physical activity over the next month?" (extremely unmotivated – extremely motivated). The second item stated: "I strongly intend to do everything I can to engage in regular physical activity over the next month" (extremely untrue – extremely true). The last item asked: "How committed are you to engaging in regular physical activity over the next month?" (extremely uncommitted – extremely committed). The reliability for these three items was α=.94.

Perceived behavioral control was assessed by six items. The first item asked: "If you were really motivated, how controllable would it be for you to engage in regular physical activity over the next month?" (extremely uncontrollable – extremely controllable). The second item asked: "If you were really motivated, how easy or difficult would it be for you to engage in regular physical activity over the next month?" (extremely difficult – extremely easy). The third item asked: "If you were really motivated, do you feel that the choice to engage in regular physical activity over the next month would be completely up to you?" (extremely disagree – extremely agree). The fourth item asked: "If you were really motivated, how confident are you that you could engage in regular physical activity over the next month?" (extremely unconfident – extremely confident). The fifth item asked: "If you were really motivated, do you feel you would have complete control over whether or not you engaged in physical activity over the next month?" (extremely untrue – extremely true). The final item asked: "If you were really motivated, how certain or uncertain would you be that you could engage in regular physical activity over the next month?" (extremely uncertain – extremely certain). The reliability for these items was α=.91.

Attitude was assessed by six items. Each item was in response to a single statement: "For me, regular physical activity over the next month would be:" (extremely harmful – extremely beneficial; extremely useless – extremely useful; extremely unimportant – extremely important; extremely unenjoyable – extremely enjoyable; extremely boring – extremely fun; extremely painful – extremely pleasurable). The items were reflective of two components of attitude: instrumental attitude and affective attitude. Instrumental attitude refers to participant evaluations as they relate to the pragmatic worth of performing a given behavior (e.g. important/unimportant; Ajzen, 2002). Affective attitude refers to participant evaluations as they relate to the emotions elicited by performing a given behavior (e.g. boring/fun; Ajzen, 2002). Research by Rhodes and Courneya (2003) highlight the utility of dividing attitude into two components when predicting exercise behavior. The reliability for the instrumental attitude items was α=.76 while the reliability for the affective attitude items was α=.80.

Subjective norm was assessed by six items. The first three items were in response to the statement: "I think that if I were to engage in regular physical activity over the next month, most people who are important to me would be:" (extremely disapproving – extremely approving; extremely unsupportive – extremely supportive; extremely discouraging – extremely encouraging). The fourth item stated: "I think that over the next month, most people who are important to me will themselves be:" (extremely inactive – extremely active). The fifth item stated: "I think that over the next month, most people who are important to me will engage in regular physical activity." (extremely disagree – extremely agree). The final item stated: "I think that over the next month the physical activity levels of most people who are important to me will be:"

(extremely low – extremely high). These items were reflective of two components of subjective norm: injunctive norm and descriptive norm. Injunctive norm refers to participant evaluations about what others in their lives would want them to do regarding a given behavior (Ajzen, 2002). Descriptive norm refers to participant evaluations about whether others in their lives perform a given behavior (Ajzen, 2002). As with attitude, the efficacy of dividing subjective norm into two components has been supported in the literature (Rhodes & Courneya, 2003). The reliability for the injunctive norm items was α=.92 while the reliability for the descriptive norm items was α=.86.

As a part of the survey, questions were included to gather information regarding the demographic profile of the participants. Specifically, participants were asked about their age, gender, height, weight, marital status, job status, family income, and state of health. Participants were also asked to list specific physical activities that they engaged in at work, at home and during their free time, including those that may be specific to First Nation culture and traditions.

Focus Group Instrumentation

Once the participants understood what physical activity is and what it can look like, the participants were asked focus group questions that elicited responses related to the meanings of physical activity (Appendix E). For example, the participants were asked "As a First Nation individual, tell me what physical activity means to you?". They were then asked about the physical activity behaviors of the WFN (Appendix E). For example, the participants were asked: "What are some examples of physical activities that you engage in?". They were also asked questions, as per the TPB, which elicited the salient beliefs of the participants related to engaging in physical activity (Appendix E).

For example: "What do you believe are the advantages of engaging in physical activity?". A complete set of the elicitation questions is provided in Appendix E. Some of the questions were modified to ensure an First Nation perspective was captured. For example, in addition to asking the control belief question "What factors or circumstances would allow you to do physical activity?", the participants were also asked "Are there any factors or circumstances related to your culture, ways of living or history that would allow you to do physical activity?". It was hoped that participant responses could be orientated into a conceptual framework that reliably reflects the elicitation questions. It was expected that the themes generated as a result of the focus groups should be reflective of the predetermined areas of interest, namely the salient beliefs related to attitude, subjective norm, and perceived behavioral control. The elicitation questions for the salient beliefs regarding the TPB constructs followed the procedures as outlined by Ajzen (2002).

Data Analysis

Research Question 1:

Descriptive statistics and correlations between behavior and the TPB constructs were analyzed first. Then, multiple hierarchical regression analysis based on the guidelines of Ajzen (1991) was undertaken. Regression analysis was used to determine the motivations (i.e. the TPB constructs of attitude, subjective norm, and perceived behavioral control) of WFN adults as they relate to engaging in physical activity. Statistics were analyzed using the Statistical Package for the Social Sciences (SPSS).

Research Question 2:

After each interview session, responses were transcribed verbatim at which time personal identifiers were removed. The transcription and audio-tape were cross-referenced for accuracy. It was hoped that, when possible, transcriptions would be verified with some of the participants at a later date to ensure content validity of the responses. The logistics of the location of the researcher (i.e. in Victoria, BC) in relation to the WFN community (i.e. Westbank, BC) made it difficult to seek verification from the participants. As such, the researcher was unable to verify the results of the transcripts with any of the participants. However, as the researcher is member of the community, social responsibility was inherent in the analysis to ensure the data did not reflect poorly on the participants or the WFN community and to ensure that an honest assessment of the data was carried out. Initially, each transcript was reviewed independently in order to get a feel for the data. Notes were made by hand on the original transcripts to highlight interesting words, comments or ideas in the data. It was expected that the themes generated as a result of the focus groups should be reflective of the predetermined areas of interest, namely the salient beliefs related to attitude, subjective norm, and perceived behavioral control. Prior to entering the data into NVivo 2.0 qualitative research software developed by Qualitative Solutions and Research International Pty. Ltd. (2002) as a project, the researcher section coded the project into sections based on the questions from the focus group. This was done so that once the data were entered into NVivo, the data were automatically divided according to each question. That is, each focus group response for a given question was grouped together into one section. This allowed the researcher to analyze the data simultaneously across the groups for each question. The

data were then coded using various terms that highlighted commonalities within the data and subsequently put into nodes. These nodes were then organized and placed under the appropriate section codes (also known as tree nodes). Once the data had been coded and categorized, graphic representations of each of the trees were developed to determine if commonalities were evident across the data (i.e. across participant responses). Such commonalities were then pattern coded. For example, several of the nodes may represent physical benefits of exercise. These pattern codes were then clustered and put into tables for further analysis, the results of which helped to determine emerging themes. The results of the data analysis provided information that can be used to compare WFN beliefs to those of non-First Nation populations (e.g. Downs & Hausenblas, 2005). Comparisons were also made to determine if existing physical activity measures adequately integrate First Nation traditional and culturally specific physical activity behaviors. As such, the information generated could possibly be used to develop a culturally appropriate measurement tool to accurately assess the physical activity levels of First Nation adults.

Ensuring Data Quality

Assessing the quality of the data is important to validating the results of qualitative research. As Creswell (2003) indicates, validity is maintained from the participant, the accuracy of the research and the readers of the research. For the purposes of this study, several procedures were undertaken to ensure the validity of the results as per Marshall and Rossmann (1999): credibility, transferability, dependability, and confirmability.

Credibility

Credibility refers to the assumption that participant attitudes, feelings and thoughts as they relate to a research topic are accurately identified and described (Marshall & Rossmann, 1999). Several strategies were used to ensure that the data were credible including triangulation. Triangulation is the process of receiving information from multiple and varied sources. For this study the participant responses were recorded via audio-tape as well as recorded using field notes. The field notes were taken by a research assistant from the WFN Recreation Department. This allowed the researcher to cross-reference these two sources of data to ensure that the data retrieved was consistent and accurate. Another strategy to ensure credibility was taking the findings to experienced qualitative researchers for review to ensure that the data analysis processes were sufficient for the purposes of generating themes and accurate interpretations of the data. The final strategies were to include "rich" and "thick" descriptions of participant comments as well as including direct quotes from the participants to lend credibility to the themes generated.

Transferability

Transferability or generalizability refers to the extent which the results of the focus group discussions represent the population from which the sample was taken (Marshall & Rossmann, 1999). The results of this study will have limited transferability to other populations. However, other studies with First Nation communities will be used as a basis of comparison which will help to lend credibility to the findings here.

Dependability

Dependability refers to the idea that the research environment is ever-changing and the subsequent need for the researcher to account for this (Marshall & Rossmann, 1999). For this study, the researcher attempted to ensure that the environment was as stable as possible by scheduling the focus groups in environments that were comfortable and relevant to the participants. Further, the researcher has described the settings and procedures for undertaking the focus groups as clearly as possible in order present a description of the dynamic research environment.

Confirmability

In qualitative research, it is assumed that researchers inherently bring a unique, if not bias, perspective to a given study. Cofirmability refers to the degree to which the findings of a study can be confirmed by others ((Marshall & Rossmann, 1999). For this study, the researcher provided copies of the results to more experienced researchers to determine if the results can be corroborated by them. Further, the nature of the responses is such that they conform to the salient belief constructs of the TPB which also confirms the results of this study (Ajzen, 1991).

Ethical Considerations

The following will explain the procedures taken by the researcher, to address ethical considerations inherent in research with First Nation participants as per Schnarch (2004). Such ethical considerations go above and beyond, and are indeed more profound, than what standard academic practice presumes. Ultimately, it is recognized there is, as of yet, no one singular First Nation research methods and thus no one set of ethical guidelines that can be applied to "Indigenous research" (Steinhauer, 2002). This is

reaffirmed by Smith (1999) who highlights that until very recently, Imperial research methods have dominated social science and have subsequently undermined the values, traditions and the voice of Indigenous communities around the world and throughout history. However, every effort was made to ensure my axiology was guided by Cole (2002) who writes in his poetic representation of Aboriginal methodology:

> some ports of call require a passport and visa
> some require oaths or affidavits of allegiance
> some sovereign indigenous nations require that you apply in advance
> to enter their domain using the correct protocol
> I know you will be respectful to the shapes and textures
> scents resiliences resonances zoning bylaws stones
> native flora "driftwood" mores ethics of the places we visit
> I know that you know how to act in someone else's home
> where you are an invited guest not a tourist
> so grab a paddle or rudder or line and keep time i t indian time (p. 448)

In essence, ethics is more than just written consent and abiding by written rules established by academics. It is goes hand in hand with Aboriginal world views. As Cole (2002) further writes regarding ethics:

> it resides too in our plank houses long houses spirit is everywhere
> everywhence (p.458).

As such, maintaining academic and First Nation ethical integrity was paramount to conducting research with the WFN.

In order to ensure the WFN maintains ownership and possession of the knowledge, it has been made clear that any knowledge that is generated will remain with the community. Specifically, a copy of the thesis and/or a summary report will be left with the WFN upon completion of the research. Ownership also implies that the First Nation community or any member of the community involved has the right to withdraw any information that may be perceived as detrimental to the community. Therefore, the

participants have been made aware that they may withdraw from the research at anytime without question as outlined in the consent process. Further, the researcher was not permitted any access to the personal contact information of the potential participants for the quantitative portion of the research, thereby minimizing the potential for losing any participant information. As the researcher is a member of the WFN the ability to recognize whether the knowledge generated was detrimental to the community was inherent in the research process.

The WFN Recreation Department was an equal partner in the research process. The department maintained control of the dissemination as they were the only ones permitted access to contact information. Also, the department was responsible for and mailing the surveys to the participants. The recreation programmer participated in the data collection process by volunteering to take field notes on behalf of the researcher. I also met with the WFN Recreation Department Coordinator and Recreation Programmer to inquire about what they would like to see out of this research. The coordinator was hoping that the research might inform how the department delivers recreation programs. As such, as a result of the research, recommendations will be made and delivered to the WFN recreation department outlining what motivates the WFN adult members to be active. From this, the Recreation Department will be able to tailor advertising of programs based on the outcomes of the research. As a result the WFN were active partners in the research process.

Finally, the WFN had access to any and all information at all times during the research process. As stated previously, the WFN will be given a copy of the thesis or summary report of the thesis findings. Also, the WFN Recreation Department will be

given a set of recommendations to use as they see fit. The WFN Recreation Department also had access to information during the dissemination process. They were the only ones to have access to participant contact information as well as were responsible for delivering the surveys via mail to the participants. If there was something that they wished to include or have taken out they were more than welcome and encouraged to discuss this with the researcher. As it happened, they were satisfied with what was being delivered to the WFN band members.

Chapter 4

Results

Quantitative Results

The demographic profiles of WFN adults are presented in Table 1. The mean age of the participants 43.3 years (SD=13.01). The sample was characterized by more females taking part than males with a majority of the participants reporting a significant other or partner in their lives. A majority of the participants (67.9%) had a household income that was greater than $20,000 which is indicative of the finding that a majority of the sample were employed at least part-time.

Table 1.
Demographic Profile for Westbank First Nation Adults

Characteristic	
Age (mean)	43.3 (SD = 13.01)
Gender (N=53) (%)	
Female	66
Male	34
Marital Status (N=53) (%)	
No partner	34
Partner	66
Family Income (N=50) (%)	
Less than $20,000	9.4
$5,000-$10,000	1.9
$10,001-$20,000	15.1
$20,001-$40,000	32.1
$40,001-$75,000	28.3
More than $75,000	7.5
Employment (N=53) (%)	
Not employed	13.2
Employed (at least part-time)	86.8

Descriptive statistics and Pearson Correlations are presented in Table 2. Of the demographic correlates gender was significantly correlated with physical activity ($r = -0.30$, $p<0.05$), income was significantly correlated with instrumental attitude ($r = .30$,

Table 2.
Descriptive Statistics and Correlations for Demographic Variables, the TPB Constructs and Physical Activity

	2	3	4	5	6	7	8.	9.	10.	11.	12.	13.	M	SD
1. Age	.11	-.28	.05	-.19	-.03	-.11	-.15	-.05	.12	-.20	-.03	-.07	43.31	13.01
2. Gender		.15	-.01	-.16	-.13	.05	.27	.12	.27	.01	.12	-.30*	.66	.48
3. Income			.18	.26	-.01	.09	.30*	.24	.05	.15	.20	.14	.72	.45
4. Marital Status				.07	.08	.04	.01	-.11	-.07	.24	.05	.20	.66	.48
5. Job Status					-.06	.27	.33*	.03	.08	.20	.23	.11	.87	.34
6. Body Mass Index						-.08	.23	.24	.08	.16	.14	.14	.50	.51
7. Affective Attitude							.46**	.16	.32*	.43**	.63**	.26†	5.37	1.12
8. Instrumental Attitude								.35*	.42**	.41**	.52**	.15	6.25	.74
9. Injunctive Norm									.53**	.35*	.27*	.05	5.79	.94
10. Descriptive Norm										.46**	.46**	.17	5.01	1.03
11. PBC											.59**	.32*	5.58	1.18
12. Intention												.40**	5.25	1.42
13. Physical Activity													3.65	3.79

†Correlation is significant at the $p<0.10$ level; *Correlation is significant at the $p<0.05$ level; **Correlation is significant at the $p<0.01$ level; M=Mean; SD=Standard Deviation

p<.05) and job status was correlated with instrumental attitude (r = .33, p<.05). The significant inverse association between gender and physical activity suggests that WFN women were less active than their male counterparts. Of all the TPB constructs only affective attitude and injunctive norm were uncorrelated (r = .16, p>.05). All other correlations were significant to at least p<.05 level. Only affective attitude, PC and intention were correlated with physical activity to at least the p<.10 level. Overall, the mean scores for affective attitude (M=5.37, SD=1.12), instrumental attitude (M=6.25, SD=.74), injunctive norm (M=5.79, SD=.94), descriptive norm (M=5.01, SD=1.03), PBC (M=5.38, SD= 1.18) and intention (M=5.25, SD= 1.42) suggest that participants reported on average more favorable attitudes to toward physical activity, reported being influenced by subjective norms, had more control over whether they were physically active and reported greater intentions to be physically active. The results also suggest that WFN members engage in physical activity on average almost 4 times per week at least at a moderate intensity (M=3.65, SD=3.79).

Table 3.
Hierarchical Multiple Regression Analysis of TPB Constructs Predicting Physical Activity Behavior.

Step/Predictor	F	F change	df	R^2 change	$ß_1$	$ß_2$	$ß_3$
1. Intention	9.31**	9.31	1,48	.16	.40**	.33*	38†
2. PBC	4.10**	.73	1,47	.01		.17	.14
3. Affective Attitude	3.26	.00	1,46	.00			-.01

† Correlation is significant at the p<0.10 level; *Correlation is significant at the p<0.05 level; **Correlation is significant at the p<0.01 level; df = degrees of freedom; $ß$ = standardized regression coefficients

The hypothesis concerning the efficacy of the TPB for predicting physical activity intentions and behavior was tested using hierarchical regression analyses. The order in which the predictor variables were entered into the analyses was based upon the

conceptual model of the TPB as posited by Ajzen (1991). Baron and Kenny (1986) suggest that the inclusion of variables in a prediction model depends on the strength of their relations to the dependent variable, in this case, physical activity. As is presented in Table 2, intention, PBC and affective attitude were the only variables that correlated significantly with physical activity exhibiting moderate effect sizes (Cohen, 1992). The first analysis, the prediction of physical activity behavior, is presented in Table 3 with physical activity regressed onto intention in the first step, PBC on the second step, followed by affective attitude on the third and final step. Results of this analysis indicated that intention alone explained 16% of the variance in physical activity behavior. The addition of PBC in the second step explained a non-significant 1% ($p>0.05$) additional variance in physical activity behavior with intention the only variable making a significant contribution to the prediction. The addition affective attitude in the final step did not explain any additional variance in physical activity behavior with intention still the only variable making a significant contribution to the overall prediction. Overall, the analyses revealed that intention was the only significant independent predictor of physical activity behavior.

The analyses also suggest that intention mediates the effects of attitude and PBC on physical activity behavior. In accordance with Baron and Kenny (1986), mediation results when the TPB predictor variables correlate with intentions; the TPB predictor variables correlate with physical activity; and finally, the effects of the correlations of the TPB on physical activity is lessened after controlling for intentions. As the results indicate, affective attitude and PBC were correlated with intention and physical activity

(Table 2), however, neither PBC nor affective attitude had any significant effect on physical activity after controlling for intention (Table 3).

Table 4.
Hierarchical Multiple Regression Analysis of TPB Constructs Predicting Physical Activity Intention.

Variable	F	df	R^2	ß
Affective attitude	23.34**	2,47	.50	.36**
PBC				.48**

**Correlation is significant at the p<0.01level; df = degrees of freedom; R^2 = adjusted variance; *ß*=standardized regression coefficients

Table 4 presents the prediction of physical activity intention, with intention regressed onto affective attitude and PBC. Only affective attitude and PBC were included in this analysis because none of the other variables correlated with physical activity. And, since intention mediated the effects of affective attitude and PBC on physical activity, further analysis was carried out to determine their relative contributions to predicting intention. The addition of any other variables would reveal spurious results as they have no significant associations with physical activity. Results of this analysis indicate that affective attitude and PBC explained 50% ($p<0.01$) of the variance in intention. Both affective attitude ($p<0.01$) and PBC ($p<0.01$) made significant contributions to the prediction of intention.

As a result of these analyses, gender was not mediated by the TPB. As per Baron and Kenny (1986) gender should be correlated with both the dependent variable (physical activity) and the mediator variables (TPB constructs) prior to determining if the TPB mediates the effects of gender on physical activity. As is presented in Table 2, gender was only associated with physical activity. Therefore, no further analysis was deemed appropriate to carry out.

Qualitative Results

Chapter 4 has been divided according to Ajzen's (1991) Theory of Planned Behavior salient beliefs: behavioral beliefs, normative beliefs and control beliefs as they relate to engaging in physical activity. The questions were based on the guidelines as per Ajzen (2002) for eliciting salient beliefs and modified somewhat to ensure that a First Nation perspective was brought forth. Also, questions were posited that attempted to elicit the meanings of physical activity as well as the types of physical activities that WFN adults engage in. As such, Table 5 presents the results of the types of physical activities that WFN adults engage in. Table 6 presents a summary of the themes that were constructed from the subsequent salient belief analysis.

Table 5.
Types of Physical Activities for Westbank First Nation Adults

Organized Sport	Leisure-Time Physical Activity	Non-Leisure-time Physical Activity	Traditional Activities
Softball	Jogging	Yard work	Fishing
Basketball	Weight Lifting	Occupational Activity	Hunting
Golf	Aerobics	Housework	Skinning
Rodeos	Fitness Gym	Stairs at work	Native Dancing
Ice Hockey	Swiss Ball	Walking at work	Trapping
	Pilates	Gardening	Horseback Riding
	Walking		Chopping Wood
	Biking		Berry Picking
	Hiking		Canoeing
	General Dancing		Lacrosse
	Snowboarding		Vision Quest
	Tobogganing		
	Snow Sledding (Ski-Doo)		
	Swimming		
	Playing with Children		
	Aqua Exercise		
	Walking the Dog		
	Horseshoes		

Table 6.
Themes Constructed From Westbank First Nation Focus Group Discussions Relating to the TPB Salient Belief Constructs

TPB Salient Beliefs	Theme
Behavioral Beliefs	Theme 1: Holistic beliefs of physical activity: Mind, Body, and Social Networks (Family and Community)
Normative Beliefs	Theme 2: Physical activity normative influences as a social pyramid.
Control Beliefs	Theme 3: Personal, Environmental and Cultural factors as facilitators and barriers to physical activity
Meanings of Physical Activity	Theme 4: Physical activity as a health process integral to the past and present: traditional and non-traditional activities.

The results of the data analysis of three focus groups are presented according to the salient beliefs and meanings of physical activity.

Behavioral Beliefs

Behavioral beliefs are those beliefs about the outcomes and attributes of a given behavior and the value placed on those outcomes and attributes (Ajzen, 1991). For example, an individual may believe that physical activity will help with weight control but place little value in that belief because they may not be concerned about maintaining a given weight.

Theme 1: Holistic beliefs of physical activity: Mind, Body, and Social Networks (Family and Community)

> I think you can take a look at the community and the people who are physically active and you can see that they are healthy mind-wise as well as physically.
>
> Just all around well being. You have more energy to do a lot more. What's that, like your stamina? Or, endurance. Stress relief big time. And you feel healthier, like not sluggish. And you just look good.
>
> Now it gives us a chance for companionship. We can go and play ball with other ladies and it's a chance to get together as women.

These quotes exemplify the holism that WFN adults associate with physical activity. When asked about what they believe are the advantages and disadvantages of doing physical activity, the focus group participants repeatedly responded with comments that were indicative of holistic health states; health states of the mind, the body and the social networks (family and community).

With regard to the health of the mind, for example, several community members' comments reflected the acquisition and exhibition of positive character traits as a result of doing physical activity. Specifically, one member indicated that physical activity promotes cooperation, especially in team settings. Another indicated that physical activity can require discipline. There was also an indication that physical activity can result in positive cognitive states. For example community members believed that physical activity can result in increased self-confidence, that it promotes increased self-worth and that it brought about happiness. Contrary to these positive states of the mind one community member indicated that physical activity can bring about mental anguish when one does not meet the expectations of others and themselves in a sport setting. Another indicated that she tended to become over-focused on her sport of choice, perhaps to the detriment of her family, with other members suggesting that ultimately physical activity could lead to addiction; to exercise addiction, medication addiction from rehabilitation, and perhaps eating disorders.

Effects on the body were also considered consequences of physical activity. Several comments from the community members were indicative of the benefits of physical activity in terms of general physical states, specific physical states as well as disease prevention. For example, one member summed up the benefits of physical

activity as a preventive measure, while others indicated specifics like the prevention of arthritis, diabetes, and obesity. Other members' comments characterized the benefits of physical activity in more general terms like living longer, looking good, or keeps the body healthy. Examples were also given of the specific benefits of physical activity such as the releasing of endorphins, improving endurance and results in more energy. The negative consequences of physical activity on the body were also not lost on the community members. Several comments suggested that physical activity could lead to injury, which in turn leads to missing work, taking away from family priorities and paying for rehabilitation and physical therapy.

Finally, the consequences of physical activity were social in nature. That is, physical activity has advantages and disadvantages relating to and stemming from ones family, the community, as well as the wider community. Several community members' comments were reflective of the idea that physical activity is good for the community. Several members suggested that it provides opportunities to create and compete as all native teams. Another member believed that playing softball gave her a chance to see new places and meet new people. Physical activity provided for the opportunity to socialize with other community members and friends as well as other First Nation peoples from different communities and instill a sense of accomplishment. These accomplishments were advantageous in that they promoted social learning. Specifically, as one member reflected, it sets examples for the younger community members. Other comments were indicative of how physical activity can also promote discrimination from the wider non-First Nation community. Perhaps, as one member believed, it provides opportunities for stereotypes to be maintained. First Nation peoples could be singled out

or ostracized when playing on non-First Nation teams in non-native leagues or non-natives could perceive native-only teams as discriminating against non-First Nation. Also, one member suggested that athletes may feel too much pressure from outside sources, such as coaches, to succeed and may be negatively affected if they didn't meet others expectations. There were also indications that physical activity may affect family relations. There were suggestions that physical activity could take away from your family, your job, or your duties around the house if you are overly focused on your sport or due to injury, both of which have been alluded to earlier, but at the same time, as another reflected, it could also promote family bonding when you're out being active with your children or grandchildren. One participant suggested that physical activity with her family was "recreational fun".

Despite all of these beliefs, two interesting comments suggested that the advantages and disadvantages of physical activity were the same across cultures. However, elements such as discrimination and the prevalence of diabetes may suggest that First Nation peoples do have behavioral beliefs and concerns that are specific to their culture. Table 7 presents a summary of some of the comments relating to WFN adults behavioral beliefs.

Table 7.
Holistic beliefs of physical activity: Mind, Body, and Social Networks (Family and Community)

Holistic Realm	Comments
Mind	• Positive attitude. It brings you happiness (advantage) • Well, um, self-esteem and self worth (advantage) • You know when you commit to something…you commit to something fully. It's really hard not to, to back away from it, and sometimes to the detriment of your family so…(disadvantage) • I think it also, um, you know if you get those kind of coaches that kind of push you so much where they set your goals so high and if you don't meet them, you know, that could cause mental issues (disadvantage)
Body	• I think that the epidemic of diabetes is not just in our own community. It's huge. You have to have physical activity and good health and good eating habits and you know…it's becoming common in our children is a huge issue (advantage) • So it does give you endorphins or energy; a natural kind of high (advantage) • Over exertion, your body can only handle so much (disadvantage) • I think also you can hurt yourself, you know injure yourself, and set you off work.
Community	• Even if you go to pow wows you see the dancers and all the families there (advantage) • You know when there's a ball game going on or whatever, the community comes out, comes together sits there and watches the games. You know, it just brings people together when there's sports (advantage) • Mixing alcohol with sports. In first nation communities it can be an excuse to drink. An excuse to drink all weekend (disadvantage) • In hockey, some Native players get labeled as the tough guy on the team, instead of really pushing their skills (disadvantage)

Normative Beliefs

Normative beliefs are those beliefs about who in an individual's social network would approve of a given behavior and their willingness to adhere to these expectations (Ajzen, 1991).

Theme 2: Physical activity normative influences as a social pyramid.

> My kids are, that's who made me the most (active)
>
> I think if, not me personally, but um, if you're in a certain job that demands a little more. Endurance or whatever, you know, your co-worker or whoever, I feel that would be a big part of it too. If you're not pulling your weight on what you're supposed to be doing that could be…
>
> Maybe I would say, maybe the, like, the outer community, besides like, our bands or our reserve community, I think that the white community may not like the idea of all native tournaments, all native teams and stuff like that, maybe because, like, they may see it as a racist thing, or like a prejudice thing by not allowing Caucasian players in.

These quotes exemplify the social pyramid that influences WFN adults' physical activity behavior. Specifically, the results indicate that as the participants' social relations become less intimate, they appear to become less influential. The base of the pyramid for these community members was their intimate social network such as family and relatives, the next layer of influence was their more distal social network such as friends and coaches, and the final layer consisted of the wider society such as doctors and even movie stars.

The number of times that a family member was alluded to when talking about physical activity far outweighed other social influences. For example, several community members suggested that those people who would most likely approve of them doing physical activity included spouses, boyfriends or partners. Other common

suggestions included children and great grandchildren as well as moms and dads. Specifically, one community member reflected that she was physically active everyday because she was afraid that her great grandson, for whom she was the sole guardian, would worry about her health. Contrary to approving of doing physical activity some community members suggested that their significant others, in the past, may have disapproved of their physical activity. Two different focus group participants believed that they had irritated or even lost their boyfriends because they may have felt it alienated their partners from that part of their life. One community member suggested that her brothers and sisters did not care whether she was physically active or not. To the extent that a house pet can be considered a family member, one participant thought that her dogs were physical activity motivators as she explained that she would hear about it from them if she did not take them for a walk.

The next layer of influence, one not as intimate as family members, included those people such as friends, coworkers, as well as community elders and other people who were physically active in the community. For example, one community member believed that seeing other people active at work made her feel guilty for not being active on her own lunch. Another suggested that the diabetes coordinator for the WFN community was is always encouraging her and other elders to be physically active. On the contrary, it was suggested by one participant that friends may disapprove of her being physically active because she thought that they might be jealous of her for doing physical activity.

The final layer of the pyramid consisted of people such as the wider community outside of the WFN, health professionals and even celebrities. These types of influences

were not referred to as often even though the opportunity existed for them to do so in the form of a probing question that asked if there was anyone else that they could think of that would approve or disapprove of them being physically active. Specifically, a community member suggested that their doctor or chiropractor would approve and encourage them to be physically active. Another community member suggested Angelina Jolie set an example for her to be active because her beauty was something to strive for. One comment alluded to the non-First Nation community as disapproving of the First Nation community being active because they wouldn't want the native community engaging in behaviors that are healthy. Along these lines, and as alluded earlier, it was suggested that the non-First Nation community would not approve of all First Nation teams and all First Nation tournaments because they would feel discriminated against.

The participants were also asked to reflect on how common it was for WFN members to be physically active. Considering all of the aforementioned sources of social influence, were WFN members actually active? Although not necessarily a theme, the results suggest the there were differences in opinion. Several members believed that the WFN was very active. Specifically, one self proclaimed high active member suggested that there were many sports teams and a lot of gifted athletes in the community and that the WFN community was more active than other native communities. Members from other focus groups, however, suggested the WFN was not very active. For example, one member suggested that about only 30% of the community was active while another suggested that women were more active than men.

Overall, the results suggest that the immediate family was the primary influence for physical activity behavior. However, these influences may not always transfer into behavior as is evidenced by the discrepancies in beliefs about current WFN activity levels. A summary of some of the normative beliefs can be found in Table 8.

Table 8.
Physical Activity Normative Influences for Westbank First Nation Adults As a Social Pyramid

Pyramid Layer	Comments
Intimate Social Network	• My number one motivation is my daughter (approve) • I like showing my great grandson that I'm still a young great grandma to him, and that he's not going to be so worried about my health or my age and thinking how much longer do I have or something. I like to show him that, and I like to show him that everyday that I can still get up and do all kinds of things. (approve) • Well, from my experience, spouses or partners. It can take you away from home. Or if you're into that sport and they're not in that group they can feel left out (disapprove) • Well, I've lost a few boyfriends from playing ball. I was too focused on my…my ball was too important then (disapprove)
Distal Social Network	• My ball team. My coach, she'd love it. She gets on us (approve) • Yes, (diabetes coordinator) would be one that would get us going. She's always after us to be active. (approve) • Different friends or different people, some might disapprove, or they are jealous. Or they don't want you to be physically fit (disapprove)
General Society	• Celebrities of course. I wanna be looking like Angelina Jolie. It gives me inspiration. (approve) • When you go to your doctor or your chiropractor and they're always saying good for you, you know, it kinda makes you feel pretty good (approve) • Or, maybe they (non-First Nation community) are concerned because they don't want to see native people being healthy (disapprove)

Control Beliefs

Control beliefs are those beliefs about factors that allow an individual to perform a given behavior or prevent an individual from performing a given behavior as well as the beliefs about the strength of these factors to inhibit or facilitate behavior (Ajzen, 1991).

Theme 3: Personal, Environmental and Cultural factors as facilitators and barriers to physical activity

Motivation. It's hard to get motivated to be active.

> Well, we have the gym, we have the ball parks, we have golf courses, we have, what else do we have? I mean even in the surrounding areas we have tennis courts, everything is available in a do-able vicinity so that you can get there if you have to.

We're doing more spiritual activities that involve being physically active.

These quotes exemplify the beliefs that WFN adults have regarding control over doing physical activity. Many of the comments from the participants were indicative of the idea that personal factors affected their choices to be physically active. Personal factors were categorized as those things that related to and stemmed from the self and their life situations such as single parenthood, personal health, money or even lack of equipment. Such factors were primarily reflected upon as barriers to being physically active. For example, one community member believed that they had no time to be more physically active. This sentiment was echoed be several others who claimed that they had other priorities in their lives and that physical activity was secondary to paying the bills or looking after children. A few members made note of the fact that there were several single parent families in the WFN community and that this was a barrier for being physically active. Specifically, one participant said that it can be hard to have someone

take care of children while you go out to do something active. Contrary to being a barrier, several people commented that their job situations made them active.

While personal factors appeared to act only as barriers, physical environmental factors such as access to facilities and social environmental factors such as social support were perceived as both facilitators and barriers to physical activity. The idea that there was easy access to facilities which made it easy to be active was brought up several times. One community member believed that the WFN community was in a good location that promoted physical activity. She suggested that being near a major town meant that WFN members had many opportunities to be physically active if they wanted to. Several participants reflected that the current existence of a recreation facility within the community should make it easy to be active. Contrary to the belief that the environment acts as a facilitator, several participants suggested that the social and physical environment was a barrier to being physically active. For example, two participants reflected that there were a lot of single parents in the community, and the lack of support in the form of babysitting, made it difficult to be active. Also, despite having the availability of a recreation center, it was suggested by one participant that she wished she had greater access to equipment. She went on to comment that she would like to see a sign out program for equipment such as exercise video tapes or fitness equipment for community members to use at home. Another participant suggested that exercise gyms were intimidating environments to work out in, and that because of that she chose not to go to public exercise gyms. The issue of lack of safety was also brought up by a few of the participants. For one participant, the absence of bike paths where she lived was a barrier to riding her bike. Finally, it was suggested that there was a lack of exercise

support and education on the benefits of physical activity for adults in spite of the existence of a full time recreation coordinator. There were programs for youth and there were programs for elders, but there were not that many programs offered by the community for younger to middle adult age people.

Just as the environment in which the community members lived acted as a facilitator and barrier, so too was the effect of First Nation culture. Many of the participants suggested that current lifestyles of First Nation people have lead to lower physical activity rates. Specifically, as one participant reflected, it was thought that First Nation people are so absorbed in to European culture that they have lost some of the traditions that were in of themselves physically active. However, it was suggested, in spite of this loss of tradition, that the persistence of some traditions although not as prevalent as they once were, have acted as facilitators to physical activity such as pow wows, hunting, fishing and trapping. There was also a consensus among several of the participants that there needed to be more activities planned that were cultural in nature; a sort of resurgence in First Nation tradition that would facilitate physical activity. For example, one participant suggested organizing hunting parties every so often for all community members to join if they wanted to. Another suggested identifying cultural teachers that could teach other WFN members of the inherently active traditional ways.

As the results indicate, personal, environmental and cultural control factors influenced WFN members' physical activity behavior. A summary of the some of the comments regarding control beliefs are presented in Table 9.

Table 9.
Control Beliefs for Westbank Frist Nation Adults.

Control Beliefs	Comments
Personal	• Well, I think even my job. My job makes me physically active (facilitator) • Um, well lack of money. Being able to afford to pay the fees to join a sport or buy the equipment required for the sport (barrier) • I think mainly sometimes we can become shy. Shy to do physical activities with non-natives (barrier) • Transportation is a big limiting factor. If you don't have the money, if you don't have the transportation, and you're a young person it's very difficult to go out there to, to try to join a sport (barrier) • Drugs and alcohol. Well not just in our culture, but I think that's a big factor for a lot of people (barrier)
Environmental	• (Having) Support groups doing things. Like that are walking or biking. Like having a sport club within the community. Like a cross-country club or something like that (facilitator) • There's a good place to walk, which would be up Boucherie now that it's all paved (facilitator) • Too many dogs and too many crazy people. Like (her daughter) was almost, well some guys stopped and started swearing at her and tried to pick her up just for walking, and she quit walking (barrier) • I tend to disagree to me I don't think it's really supported. I don't think healthy lifestyles are supported (barrier)
Cultural	• Just as an idea, like if we wanted to go cultural, is if we offered cultural recreation as a high priority, like taking our youth hunting for the day or fishing. Teaching them how to gut and skin a dear, and to gut a fish and that sort of thing. And, just make it a regular thing (facilitator) • Well, just having pow wows around. A lot of people do pow wows (facilitator) • My moon time. Traditionally, back then, in Native culture there was a break for women during that time of the month (barrier) • Well, a lot of, you know, there's culturally, if you're a (pow wow) dancer or whatever and you have a close family member that passes away you're not supposed to dance for a year (barrier)

Meanings of Physical Activity

The WFN participants were asked to describe what physical activity meant to them. This was asked to determine if there were meanings different to that of other populations.

Theme 4: Physical activity as a health process integral to the past and present: traditional and non-traditional activities

Physical activity means good health.

> First thing I thought of is that it's a part of our medicine wheel. Well, our own medicine circle. Cause you know there is the mental, physical, spiritual, and emotional. The physical is there, and that's taking care of yourself. That's being exercising your body, and that's part of our culture that is lost as well.

> Um, native people back in the day were very um, running. A lot of running. A lot of um, that was their transportation, walking and running.

> I think so, especially with, um, this day and age, because I think as (First) nations we take pride in our, in what we do, and how well we do it. And, whether that be a sports team of some kind like hockey or ball, or basketball, I think it still has significant meaning to each nation and each band, you know, how well they do in whatever sport they're participating in.

These quotes exemplify the beliefs about the meanings of physical activity which are indicative of physical activity as intertwined with the lives of WFN adults and their history. Indeed, a dichotomy emerged between what physical activity meant historically to First Nations and what it means now. Several of the participants commented that physical activity was a part of the lives of their ancestors as they were hunters, fishers, dancers, and rode horses. Physical activity was not something you chose to do. As one participant suggested, being physically active was a means of survival. Another suggested that it was an important part of the First Nation medicine wheel and that physical activity helps to maintain a balance in their lives.

Today the meanings of physical activity have different and varied connotations as various participant comments suggest that physical activity means engaging in more historically non-First Nation activities such as playing basketball, softball and soccer, going for walks and gardening. They still believe, however, that physical activity also means practicing some of their traditions such as pow wows, fishing, and hunting. For example, one participant reaffirmed that physical activity meant native dancing. Physical activity also has strong social connotations as another community member suggested that Physical activity meant a chance to socialize with her family. Similarly, another member suggested that physical activity meant opportunities to socialize with the other native communities at all-First Nation tournaments. A social gathering and a bringing together of their community and other communities was repeatedly brought up. Interestingly, one participant believed that physical activity meant claiming non-traditional games such as softball and basket ball as their own. As he claimed, First Nation have long since organized and competed in all-First Nation tournaments in these sports and First Nation culture, such as native dancing, has been integral parts of these tournaments. Another participant reflected on how they added First Nation culture to their annual memorial softball tournament.

Overall, it is evident that the meanings of physical activity have changed over time, but it still plays an integral role in the lives of WFN adults. Table 10 presents a summary of the results of some of the meanings of physical activity for WFN adults.

Table 10.
Meanings of Physical Activity For Westbank First Nation Adults For the Past and Present

	Comments
Past	• Maybe in the past, in the past definitely. It was all about physical activity…Just in regards to your survival, your…how you get your food. Um, you know, setting up your own house • Well, a lot of native people were manual laborers. Yeah so, they had to be very physical. That's what I think of anyways. • A means of living. Cause that's the way they had to. It's not like going down to your grocery store anymore • Hunting • Fishing
Present	• Now it's like nobody does anything (related to traditions). • First things it brings up to me is playing ball. Sport. • Soccer games, it's indoors and outdoors • I think a lot of the sports that we kind of do now is kind of, you know in a way, it has become culture, like native culture. Like baseball has been played in tournaments here for years and years. So I think that could be considered culture, because it's, you know like you said, a gathering of communities, a gathering of people

Chapter 5

Discussion

Quantitative Discussion

It was hypothesized that the TPB would adequately predict intentions and physical activity behaviors in a sample of adults from the WFN.

Descriptive Statistics

The descriptive results suggested that females were less active than males ($r = -.30$, $p<.05$) and according to Cohen (1992) this is a medium effect size. That is, such differences could have practical and/or clinical implications (Brunet et al., 2005). A recent review of physical activity and Native Americans found similar results revealing effect sizes ranging from small to medium in size with Native American women being less active than their male counterparts (Coble & Rhodes, 2006). This is also not unlike major reviews with the general population, which reveal that men are more active than women (Trost et al., 2002). Previous research has not consistently measured occupational or household activities in First Nation populations which may have helped explain some of the differences between First Nation men and women (Coble & Rhodes, 2006). Specifically, much of First Nation research does not measure activities like housework (Coble & Rhodes, 2006). However, a strength of this study is that physical activity was measured to include all leisure and non-leisure time physical activities which can include occupational or housework activities. Future research must determine dose-response relationships for much non-leisure time physical activity such as occupational and household work because although First Nations peoples may perceive that they are

getting physical activity through work or household chores, they may not be doing enough to achieve health benefits.

Demographics

The results here show that age, income, marital status, employment, and BMI were not associated with physical activity. The fact that age was not correlated with physical activity is dissimilar to the findings of Coble and Rhodes (2006) who found that age was consistently correlated with physical activity in Native Americans with much of the research revealing small to medium effect sizes. Findings of other major reviews with the general population were also contrary to the age results here (Trost et al., 2002). Age is considered to be one of the most consistent correlates of physical activity (Trost et al., 2002). The fact that age was not correlated here could be attributable to the restricted age range. Many of the studies in the Coble and Rhodes (2006) review included sizeable age ranges. A larger age range that included a reasonable number of elderly participants may have increased the variability in physical activity levels and thus a significant association may have been evident in the results here. Income, marital status, employment and BMI were also not associated with physical activity similar to the findings of Coble and Rhodes (2006). Other reviews indicate that income, employment and BMI are consistently correlated with physical activity in the general population while marital status has shown mixed results (Trost et al., 2002). It is possible that there was not a sufficient amount of variability to begin with in order to find significant associations. For example, there needs to be sufficient variability in income to determine if various levels of income are associated with various levels of physical activity. If everyone had a large income, there would be no way to determine if lower income was

associated with less or more activity. Further, for the purposes of this study, the lack of variability may be due, in part, to the small sample size.

In terms of the descriptive data related to the TPB constructs, only affective attitude and injunctive norm were uncorrelated. The four strongest correlations were between affective attitude-intention, PBC-intention, instrumental attitude-intention, and descriptive norm-intention. There are no studies that use the TPB with First Nation populations and as such, comparisons are limited. However, such associations are similar to the patterns found by Hagger et al. (2002) in their meta-analytic review of TPB and physical activity.

Theory of Planned Behavior

As stated previously, it was hypothesized that the TPB would adequately predict intentions and physical activity behaviors in a sample of adults from the WFN. This study partially supports the utility of the TPB for understanding physical activity behavior in WFN adults. Specifically, intention explained 16% of the variance in physical activity behavior in WFN adults with no other constructs making significant contributions. This finding accounts for 11% less variance in behavior compared to the findings of major reviews that reveal strong intention-behavior and PBC-behavior relationships (Hagger et al., 2002). Comparatively, Hagger et al. (2002) found in their meta-analysis that the TPB accounted for 27% of the variance in physical activity behavior. This difference in findings is relatively small especially considering such discrepancies could be attributed to accuracy of measurement, the smaller sample size of the present study, as well as real and meaningful differences due to culture. Despite the lower explained variance in physical activity behavior in the present study, 16%

explained variance by intention is still considered a medium effect reaffirming the utility of the TPB in this sample of WFN adults (Cohen, 1992). Further, the findings that intention mediated affective attitude and PBC provides further evidence for its utility as such results are consistent with the tenets of the TPB and major reviews (Ajzen, 1991, Hagger et al., 2002)

Other studies using conceptually similar constructs to the ones found in the TPB emphasize the importance of intentions as they relate to physical activity behavior in First Nation populations. For example, the precontemplation and contemplation stages of the Stages Model are similar to one's intentions to engage in a behavior. Individuals in these stages are have either not thought about engaging in physical activity or are thinking about engaging in physical activity. Two studies using the Stages Model with First Nation populations supports the findings here that intentions are important factors relating to physical activity behavior (Bull et al.2000; Stolarczyck et al. 1999). These studies revealed that a minority of their participants were in the precontemplation and contemplation stages of physical activity readiness. That is, only a relatively small percentage of participants had no or low intentions of being physically active. A majority of those participants in the latter stages of readiness to be physically active (i.e. preparation, action and maintenance) could be considered to have higher intentions to be physically active. In another study using conceptually similar constructs, Cuaderes, Parker and Burgin (2004) used the Self-Motivation Inventory (SMI) as a part of the Health Belief Model in order to determine its relationship to exercise behavior in a sample of Native Americans. They found that the SMI was significantly associated with exercise behavior. These studies employ models measuring conceptually similar ideas

relative to the TPB intention construct and, as such, their findings emphasize the importance of intentions in relation to physical activity behavior in First Nation peoples.

The results from these studies suggest that First Nations may be engaging in more physical activity than is presumed and have high intentions of engaging in physical activity. However, as is the case here, though intentions significantly and meaningfully predict physical activity behavior, it is evident that 84% of the variability in physical activity behavior is unexplained and thus other factors outside of the TPB help determine physical activity behaviors in this population. Gender was found to have significant associations with physical activity but was adjudged to not be mediated by the TPB as it violated the necessary preconditions of mediation as per Baron and Kenny (1986). Therein may be an explanation as to what could be affecting physical activity behaviors independent of the TPB and may account for some of the 84% unexplained variability. It is possible that gender roles or cultural expectations of gender my affect physical activity levels. Future research might want to consider using post-intentional constructs such as implementation intentions in addition to the TPB. Such constructs aim to aid in the process of turning intentions into behavior (Gollwitzer, 1999). Implementation intentions are those processes, such as specific planning, that individuals initiate in order to achieve a given behavior (Gollwitzer, 1999). Although the use of implementation intentions has revealed small to trivial effect sizes in the literature (Rhodes, Blanchard, Matheson, & Coble, 2005), including measures that adequately encapsulate the full contexts of implementation intentions might, as Rhodes et al. (2005) suggest, shed light on intention behavior relationships in First Nation populations.

As for predicting intentions, affective attitude and PBC explained 50% of the variance in intention with both constructs making significant contributions to the prediction equation ($p<.01$). Hagger et al. (2002) found that a TPB model that included all of the constructs predicted 45% of the variance in intention. As such, the findings here are quite comparable to the findings in the general literature. Further, the results here could be considered resulting in large effect size (Cohen, 1992). The finding that PBC ($B=.36$, $p<.01$) and affective attitude ($B=.48$, $p<.01$) made significant contributions to the prediction of intention is also consistent with findings of Hagger et al. (2002). The inclusion of only the most meaningful correlates of physical activity in the regression equation here (i.e. affective attitude and PBC) is consistent with the methods of Baron and Kenny (1986) and Sutton (2002). Specifically as Sutton (2002) indicates, understanding the relative contribution of attitudes, subjective norm, and PBC is integral to determining which construct an intervention should target. Further, intervention success is largely determined by changing the corresponding key beliefs (Sutton, 2002). Therefore, including constructs that do not initially correlate with a given behavior would only lead to spurious regression results and thus lead to designing interventions aimed at changing beliefs that have little to do with the behavior in question (Sutton, 2002). Research done by Brunet et al. (2005) in a sample of First Nation adults from Alberta also lends credibility to the inclusion of affective attitude and PBC in the prediction equation here. Brunet et al. (2005) employed the Social Cognitive Theory (SCT) constructs of self-efficacy, observational learning, outcome expectation, the social environment, and the physical environment. Self-efficacy is inherent in PBC, observational learning and social environment are similar to subjective norms and

outcome expectations are similar to attitudes (Bandura, 1998). Despite none of the aggregated SCT constructs correlating significantly with any of their measures of physical activity, a majority of the associations between various physical activity measures and the SCT constructs exhibited small effect sizes (Brunet et al., 2005). In another study, Cuaderes et al. (2004) found that their barriers scale, which shares similarities to Ajzen's PBC construct (Ajzen, 1991), was associated with adult Native American exercise behavior. Therefore, PBC and attitude in both studies appear to be important factors related to physical activity intentions and behaviors in First Nation peoples.

In summary, the results of this study provide evidence that the TPB is a useful model for understanding the determinants of physical activity intentions and behaviors in First Nation populations. The results also suggest that intentions mediate the effects of affective attitude and PBC on behavior. In practical terms, interventions designed to increase low levels of intentions in WFN adults should target affective attitudes and PBC towards physical activity. Specifically, these interventions might want to include elements that describe how enjoyable and fun physical activity can be in addition to describing the health benefits of physical activity. Interventions should also be designed to enhance the participants' perceived control over doing physical activity by making facilities or equipment easily available to them as well as information about how easy it is to achieve the optimal amounts of physical activity. However, designing successful interventions would also require the measurement of direct and indirect behavioral and control beliefs about physical activity (Ajzen, 1991)

Although the results of this study are unique in that no studies have used the TPB in explaining First Nation motivations to engage in physical activity, limitations are evident. First, the response rate at 16% and small sample size were less than ideal perhaps leading to the weaker overall explanatory power of the TPB exhibited here. Due to the lack of demographic data for the WFN as a whole it is difficult to surmise accurately whether the sample was representative of the total WFN population. However, given that demographic data exist about Aboriginal people from the interior of BC, two demographic characteristics suggest that the sample of WFN adults is not that different from Aboriginals living in the surrounding area. First, 59% of respondents had an income of $40,000 or less. Comparatively, 83% of population of Aboriginals 15 years or older from the Interior Health Authority (IHA) region earned an income less than $40,000 in 2000 (BC Statistics, 2001). Second, 87% of WFN respondents were employed at least part-time while 68.2% of Aboriginals 15 years or older from IHA region had worked in 2000 (BC Statistics, 2001). Although the numbers do not appear to be similar, two items should be noted. First, the IHA demographic data include a sample with Aboriginals 15 to 17 years of age, and second, the IHA data also include Aboriginals, a term that includes North American Indians, Metis and Inuit (British Columbia Statistics, 2001). Both of these factors might explain why more IHA Aboriginals make less money as well as why IHA Aboriginals have higher unemployment rates. The sample in this study may resemble the WFN population as a whole.

Second, the present study also may be subject to validity issues related to the GLTEQ and the TPB. The GLTEQ was modified to include physical activities that were specific to First Nation communities such as pow wow dancing. However, as no

previous research has measured the relative intensities of First Nation specific physical activities, only an estimate of the intensity levels of such activities could be made and were included as a part of the GLTEQ accordingly. No previous physical activity research has used the TPB with First Nation populations although the model has found utility with African American populations (e.g. Martin et al., 2005; Trost, Pate, et al., 2002). Further, using published meta-analyses as a general comparison is useful but not ideal. Future research should use a comparison group of non-First Nation peoples to determine if there are any significant differences between First Nation peoples and other populations. However, it is possible that the results here may be atypical of the general population and not coincide with research with other populations. Thus, more research using the TPB may confirm or disconfirm the findings here. The fact that it is the first of its kind may also be considered one of its strengths.

Third, findings from this study cannot be generalized to First Nation adults from other regions. There are 198 First Nation bands in British Columbia each unique in its traditions, customs, and geography (Indian and Northern Affairs Canada, 2006). Therefore, the motivations of the WFN adults may not be the same as those First Nation communities from the coastal regions of British Columbia.

Finally, the fact that the study was cross-sectional in nature suggests that causal relationships cannot be inferred. However, considering the paucity of research that exists with First Nation populations and physical activity, a study of this type is an important first step for understanding the strength of the associations between various social cognitive determinants and physical activity. Research like this provides valuable information for future intervention designs.

Qualitative Discussion

The second purpose of this study was to determine the behaviors and salient beliefs of WFN adults. Using the TPB as a framework, focus group questions explored the behavioral, normative and control beliefs of WFN adults as they relate to physical activity. It should be noted that most of the focus group participants were female, and thus the discussion is more reflective of female perspectives. Despite the nature of the sample, however, males did indeed participate and thus their perspectives have been included as well.

As this part of the study was qualitative in nature, no specific hypotheses were posited. However, two tentative propositions were put forward: 1) that WFN adults engaged in different physical activity behaviors than the general population, and 2) that the salient beliefs and meanings regarding physical activity for WFN adults were indeed different than the general population. Themes emerging from the data indicate that WFN adults' beliefs are consistent with the general constructs of the TPB. That is, they can be categorized as behavioral, normative and/or control beliefs. The importance of eliciting such beliefs is paramount because not everyone shares the same thoughts and feelings about behavioral phenomena such as physical activity and the beliefs of the general population may not generalize to First Nation populations (Downs & Hausenblas, 2005).

The nature of the themes generated suggests that some of these salient beliefs are indeed different than that of the general population. Further, the meanings of physical activity have specific connotations for WFN adults that are different than the general population but similar to other studies with First Nation peoples. No research has used the TPB in eliciting the salient beliefs of First Nation people thus direct comparisons to

other studies of this nature are difficult to make. However, there are a limited number of studies done by a select few researchers that can be used as a basis for comparison.

Types of Physical Activity

The responses from the focus group participants indicate that WFN adults engage in several non-traditional and traditional physical activities. Although, not all of the participants participated in traditional First Natin activities, there were consistent reflections that such activities were still being done in the community. The fact that First Nation communities participate in a broad spectrum of physical activities, traditional or otherwise, is not unique to this study (e.g. Henderson & Ainsworth, 2001; Henderson & Ainsworth, 2000a). As such, these findings necessitate that physical activity surveys should include myriad physical activities that include culturally specific activities in order to better capture actual behaviors. Surveys such as the GLTEQ (Godin & Shephard, 1985) are conducive to modifications and should be modified accordingly. As Tudor-Locke et al. (2003) suggest when measuring physical activity in minority communities, researchers should use culturally relevant wording. Employing such methods may reveal that First Nation populations are more active than previously thought. A strength of this study is that participants were informed of what physical activity was and could look like prior to the focus groups. Further, the participants were asked to reflect on whether they engaged in First Nation specific physical activities, thus capturing the broader dimensions of physical activity above and beyond structured exercise.

Behavioral Beliefs

Behavioral beliefs are thought to determine one's attitude toward a given behavior based on one's evaluations about the outcome of doing the behavior and the value placed on those outcomes (Ajzen, 1991). From this analysis, it is evident that WFN adults have a holistic view of the advantages and disadvantages of physical activity. Specifically, physical activity affects the mind, body and social networks. It was not viewed as only benefiting the physical aspect of health. This holistic perception is not uncommon in First Nation health literature. Indeed, published research has: 1) described the process of providing health care to First Nation peoples, and 2) described First Nation health perspectives, both of which espouse the holism associated with First Nation health beliefs (e.g. Brunet et al., 2005; Buehler, 1992; Sanchez, Plawecki & Plawecki, 1996). For example, Brunet et al. (2005) found that Aboriginals from Alberta believed that physical activity affected the spiritual, physical and psychological domains of health.

In their systematic review of exercise beliefs, Downs and Hausenblas (2005) found that the most salient beliefs of the advantages and disadvantages of engaging in exercise were related to the physical and psychological realms of health. Such findings are not unlike what was found here. One significant difference, however, is the emphasis on social networks with the WFN community. WFN adults believed that one of the primary advantages of physical activity was that it provided opportunities to socialize with the family, the WFN community and other First Nation communities. Therefore, WFN adults' expectations of gathering socially appeared to influence whether they were active or not in addition to their perceptions of the physical benefits of physical activity. As Henderson and Ainsworth (2003) indicate in their study of perceptions of physical

activity by African Americans and American Indians, close community bonds are integral to the lives of people of color. Whereas physical activity is often a consequence of influences from family and friends, for WFN adults, social bonding is a consequence of physical activity. In the former sense, you can be influenced to be active by a significant other, but engage in solitary physical activity. In the latter sense, you are active because you want to be with and socialize with significant others. The social benefits of physical activity are also highlighted by Henderson and Ainsworth (2000b) in their study of American Indian and African American older women, with many of the American Indian participants indicating that physical activity provided opportunities to be social. Specifically, one of their American Indian participants reflected that she only usually walked with her daughter because she did not enjoy walking by herself (Henderson & Ainsworth, 2000b).

One of the main disadvantages of doing physical activity was the expectation of maintaining stereotypes and promoting racism from the wider social community. There was an indication from the WFN adults that physical activity made them more visible and prone to stereotypes as well as subject to racial abuse when being active away from the WFN community and other First Nation settings. The fact that WFN adults participate in all-First Nation tournaments, have several sports teams and on average engage in physical activity almost four times per week suggests that this may not be enough of a barrier to not be physically active.

Normative Beliefs

Normative beliefs are thought to be personal evaluations about whether important others in an individual's life approve or disapprove of engaging in a given behavior, as

well as their motivation to comply with these influences (Ajzen, 1991). Such beliefs are thought to determine an individual's subjective norms (Ajzen, 1991). The theme generated from the results identifies intimate social networks as the primary social influence to being physically active, followed by more distal networks such as friends and coworkers, then finally, the wider society. In essence, such a distinction is indicative of a social pyramid.

The primary and widest base of influence for WFN adults comes from one's family. Such beliefs are reflective of the general population. Downs and Hausenblas (2005) found that the most salient beliefs regarding important others of the general population were family members, friends and healthcare professionals. Regardless of where the influence comes from, previous research supports the idea that important others are integral for physical activity in the lives of First Nations (Henderson & Ainsworth, 2003; Henderson & Ainsworth, 2000b; Thompson et al., 2002). For example, in a study by Thompson et al. (2002), it was found that American Indian women felt that physical activity was not valued in their community and that members of their community did not necessarily approve of physical activity behaviors. These women wanted to find acceptance from the community in order to be active (Thompson et al., 2002). For WFN adults, significant others such as boyfriends, husbands, parents, grandchildren and children were the primary influences of physical activity. For the most part, WFN adults believed that most of these people would approve of them doing physical activity. However, even though boyfriends, for example, may not have supported physical activity, it did not stop many of the participants from participating in the physical activity of their choice.

The final two layers of the pyramid included people such as friends and coworkers as well as celebrities and health practitioners, the influential nature of which decreased respectively as the intimacy of these networks also decreased. For both layers, there were people who would approve and disapprove of WFN adults participating in physical activity. The most distal social network, that of the wider community, was the source of disapproval in the form of discrimination as alluded to previously. It is evident from the WFN community members' behavioral and normative beliefs, discrimination affects their physical activity habits.

When considering important others it was evident that the WFN members were divided on their beliefs about the physical activity levels of their community. Some believed that the community was very active, and others did not believe that to be the case. Even though the participants were divided on this topic, it was suggested that the WFN community was probably more active than other First Nation communities. As a result of a combination of facilities access, the prevalence of sports teams and programs, location to a major urban center and the fact that it was the opinion of some that the WFN was active, this sentiment appears to hold true. The differences in opinion may be reflective of the relative activity levels of the participants. Those who participate in physical activity regularly may believe that others from the community are active because they are more likely to associate with community members in active environments, whereas those who are not very active may not associate as often with other active people and thus their perceptions would be reflective of a less active community.

Control Beliefs

Control beliefs refer to those beliefs about factors that would facilitate or prevent an individual from engaging in a given behavior, as well as the evaluations about the strength of these factors to inhibit or facilitate (Ajzen, 1991). These beliefs are thought to shape an individual's perceived behavioral control over engaging in a specific behavior. For WFN adults, focus groups revealed that personal, environmental and cultural factors facilitate or inhibit physical activity. Specifically, personal factors were primarily barriers to being active, such as being a single parent, lack of money, no motivation and personal health where as the environment, physical and social, were barriers to and facilitators of physical activity such as access to facilities and social support.

The importance of personal and environmental control factors as they relate to participating in physical activity have been highlighted in other studies with First Nation populations (e.g. Henderson & Ainsworth, 2003; Henderson & Ainsworth, 2001; Henderson & Ainsworth, 2000b; Thompson et al., 2002). For example, Henderson & Ainsworth (2001) found that a number of Native American women perceived that as they lost family members their activity levels decreased because they had fewer people in their lives to be active with. Many of these beliefs are not unique to First Nation adults. According to Downs and Hausenblas (2005), they found that the most often cited barriers to physical activity were health issues, inconvenience, no motivation or energy, time and a lack of social support. The most often cited facilitators were convenience, pleasure and social support (Downs & Hausenblas, 2005). Such barriers and facilitators were also apparent for WFN adults, however, the primary difference compared to the general population relates to culture as a barrier and facilitator to physical activity. Other studies

have revealed similar notions (Henderson & Ainsworth, 2001; Henderson & Ainsworth, 2000a; Thompson et al., 2002; Henderson & Ainsworth, 2003). For WFN adults, many First Nation traditions that are not practiced as often today were facilitators of physical activity. Thompson et al. (2002) found that a loss of tradition was a barrier to physical activity because these traditions were in of themselves inherently active such as chopping wood and hunting. However, as some of the traditions are still being practiced by some of the community members, participants believed that there was an opportunity to increase physical activity levels using cultural means. The possibility of reclaiming a lot of the traditions and teaching such traditions such as hunting to others was believed to be an opportunity for increasing physical activity levels in the community.

Meanings of Physical Activity

Participants were asked to reflect on the meanings of physical activity for WFN adults. From the results, it was clear that physical activity meant engaging in both traditional activities such as pow wow dancing as well non-traditional activities such as softball and basketball. Further, physical activity was, and is, intertwined with their lives not only as a health promoting behavior, but also as a behavior that reinforces social networks as discussed previously. The idea that physical activity meant health was also exemplified by Tudor-Locke et al. (2003). However, they also found that physical activity was often associated with doing structured exercise and incidental exercise such as housework (Tudor-Lock et al., 2003). Henderson and Ainsworth (2001) also found that American Indian women referred to physical activity in similar terms. WFN adults often referred to more structured activities, but also, as can be seen in Table 5, they also included a lot of activities that were not structured as well as culturally specific physical

activities. These meanings reflect the level of exposure to the dominant non-First Natoin Canadian society. First Nation communities that are not located near larger urban centers and have relatively less direct contact with non-First Nation communities, may have different meanings for and examples of physical activity.

Comments from the participants suggested that a loss of traditions has lead to a decrease in physical activity. This sentiment was also put forth by American Indian women in a study by Henderson and Ainsworth (2003). However, an interesting idea arose that suggested currently there was a process by First Nation communities to not only reclaim inherently active traditional activities, but also claiming non-traditional physical activities as their own. For example, although many of the traditional practices are not practiced as often, there are increasingly more opportunities to engage in more non-traditional activities. Some non-traditional activities like softball and basketball have been played by First Nation communities in British Columbia for many years, often in the form of all-First Nation tournaments. From the results there was a belief that these non-traditional activities were becoming a part of First Nation culture. They take on an First Nation flair by including cultural activities and, in essence, are becoming a part of First Nation identity. Such activities promote social gatherings within and between communities. Despite this exposure to non-traditional activities, the participants indicated that First Nation traditions such as trapping were still being practiced.

In summary, the qualitative research has revealed several important issues that might help to improve or enhance the physical activity behaviors of WFN adults. Clearly, as WFN behavioral beliefs signify, socializing opportunities are one of the important benefits of physical activity in First Nation communities and, as such,

interventions may want to focus on promoting the social benefits of physical activity in addition to promoting the physical and psychological benefits of physical activity. Also, consideration should be given to promoting physical activity opportunities in non-threatening social environments. Further, to increase the physical activity levels of WFN adults, programs should be designed to incorporate family oriented activities. Such activities would increase opportunities for approval from the most significant others in WFN adults' lives as the family appears to be the most influential source of physical activity behavior. When designing physical activity programs for WFN adults it may provide useful to ensure that these programs have cultural affects or are cultural in nature. That is, organizing traditional activities such as hunting parties that are in of themselves physically active. These types of practices make inherent sense, as providing culturally relevant activities may pique the interests of WFN adults in a more profound way than asking them to do activities that have no cultural relevance or meaning such as lifting weights. Further, this act of reclaiming physical activity in traditional ways is conducive to restoring the holistic balance that one WFN participant indicated was vital for First Nation health. Reestablishing this balance might then reinforce a sense of identity and confidence in WFN adults which could then be used as a catalyst to addressing other issues of importance related to First Nation health. It is evident that the meanings of physical activity for WFN adults may be different than that of the general population as an emphasis was placed on traditional activities in addition to non-traditional activities as sources of health promotion. Therefore, physical activity surveys should include traditional activities as alluded to earlier. Where the researcher is unsure, they should undertake pilot tests to ensure cultural relevancy, for as Table 5 suggests, physical

activity for WFN adults is more than just sport and structured activities, it is non-leisure time physical activity and traditional activities.

The qualitative findings can also be used to inform the quantitative findings of this study. The findings from the qualitative portion of this study that WFN adults engage in a wide variety of physical activity lends credibility to the methods of the quantitative study. The quantitative survey tool emphasized a broad range of physical activities including occupational, household and traditional activities in its measures. The normative beliefs of WFN adults are similar to those of the general population which may help explain the absence of predictive power of subjective norms for WFN adults in this study. If they have similar beliefs than they may have similar subjective norms and as Hagger et al. (2002) found, in their meta-analysis of the TPB and physical activity, subjective norms are not as influential in predicting intentions as attitudes and PBC among physical activity studies which was the case for WFN adults. The lack of predictive power for subjective norms may be due to the fact that social others are important for WFN adults, but is not being captured by subjective norm measures because social influences do not cause physical activity, but instead, physical activity causes WFN adults to be social in order to maintain social bonds. Thus, the social influence is more likely to be a reflection of attitude toward physical activity as it is perceived by WFN adults an advantage of engaging in physical activity. In order to more accurately measure behavioral beliefs toward physical activity in First Nation populations, perhaps including the social benefits of physical activity in a TPB survey should be taken into consideration. For example, in addition to asking about the health

benefits of walking, it may be prudent to ask if regular walking over the next month would improve family social relations with answers provided on a likert-type scale.

Although this study is the first of its kind in that no other study has used the TPB with First Nation populations in a qualitative paradigm there are several limitations associated with this study. First, there is limited generalizability to the WFN adult community and those who could be physically active if they wanted to. As previously discussed, First Nation communities vary by there customs, traditions, and ways of living as well as their level of acculturation, therefore it is possible that the advantages of physical activity perceived by the WFN may be different than those perceived by the Haida. Further, those barriers faced by WFN adults who have physical disabilities may be drastically different than those faced by the WFN participants who took part in the focus group discussions. Second, although men were invited to participate in the qualitative portion of this study, the majority of the participants were female. Thus, much of the data is representative of women's reflections. However, considering WFN women were less active than their male counterparts, as was found in the quantitative portion of this study, understanding the salient beliefs of WFN women may help to devise programs that will increase their physical activity levels. Finally, despite asking about the meanings of physical activity for WFN adults, no questions were posited that attempted to determine the values that WFN place on specific traditional physical activities and what it means for their community. Although some value statements were made regarding physical activity in general, eliciting values specific to WFN culture would highlight what types of traditional WFN physical activities would be most appropriate to target for future recreation programming. Despite these limitations, this

study is an important first step in enhancing the physical activity practices of WFN adults and as it is the first of its kind, it provides the first glimpse into the social and psychological motivations of WFN adults as they relate to physical activity.

Conclusions

The purpose of this study was to determine the motivations of WFN adults as they relate to engaging in physical activity as per the TPB. It was hypothesized that attitude, subjective norm and PBC would adequately predict WFN physical activity intentions and behaviors. The findings of this study partially support the utility of the TPB for understanding physical activity behavior in WFN adults. Specifically, affective attitudes and PBC predicted WFN intentions to engage in physical activity and intentions predicted WFN physical activity behavior while mediating the effects of affective attitude and PBC. As the findings only partially support the use of the TPB in WFN adults, it is apparent that other factors influence WFN physical activity behaviors. One such factor could be gender roles or cultural expectations of gender associated with the WFN community. Nonetheless, programs that aim to influence WFN adults' positive attitudes towards physical activity and increase WFN adults' perceived control over doing physical activity may help to increase physical activity behaviors. However, as alluded to previously, changing WFN beliefs directly would more likely result in changing WFN intentions.

The results of the quantitative research presented here can help inform future research endeavors. Considering the amount of unexplained variance in the results, future directions in research with First Nation communities might want to augment the TPB to improve its explanatory power. For example, Conner and Armitage (1998) found

theoretical support for the addition of severable variables to the TPB including self-identity. Self-identity refers to the persistent cognitive perceptions and awareness of one's own being (Conner & Armitage, 1998). First Nation self-identity beliefs may add to the prediction of their physical activity behaviors. An interesting finding from the present study was that WFN participants engaged in traditional First Nation physical activities in addition to non-traditional physical activities. In order to accurately modify existing tools such as the GLTEQ, future research should determine the relative intensities and energy expenditures of many WFN traditional activities. Although Henderson, Haskell, Whitt et al., (2000) have highlighted the metabolic equivalents of many physical activities, some specific to First Nation peoples, the diversity of First Nation communities warrants the need for future research that is community specific.

The second purpose of this study was to employ qualitative techniques in order to determine the behaviors, salient beliefs and meanings of WFN adults as they relate to engaging in physical activity using the TPB as a framework. It was presumed that the behaviors and behavioral beliefs of WFN adults would be different than that of the general population. Although similarities were apparent, WFN adults do engage in culturally specific activities and have some unique salient beliefs compared to the general population. As a result of the findings, it is apparent that physical activity programs designed to increase WFN participation should focus on the social advantages of engaging in physical activity. Physical activity should be promoted as an opportunity to create and maintain family and community bonds. For example, the WFN recreation department could develop various events that promote walking as a fundraising effort, such as walking for diabetes or cancer, and at the end of each event provide a community

dinner or feast. Further, such programs could cater to the cultural traditions of WFN adults. For example, instead of walking, perhaps the WFN recreation department could organize hunting groups, the success of which would result in a community feast sharing in the spoils of the hunt. This would serve two purposes 1) reclaiming cultural traditions that have slowly been lost over the past century and, 2) increasing physical activity levels of WFN adults as such traditions are in of themselves inherently physically active.

The results of the qualitative research presented here can also be used to inform future research directions. Specifically, future study that determines the associations between the WFN behavioral beliefs and the respective TPB constructs (i.e. attitude, subjective norm, PBC) will help to identify how much of the variance for each of the constructs are explained by their corresponding beliefs specific to a given population. This will ensure that these population specific beliefs are indeed indicative of, and accurately shape, participant attitudes, social pressures and perceived behavioral control. As Downs and Hausenblas (2005) reaffirm, such research can then be used to show how "beliefs can vary from one population to the next, and how changing beliefs can influence people's attitude, subjective norm and perceived behavioral control" (p. 27). Finally, future research will want to determine if the differences observed here are due to gender, culture or socioeconomic factors. It would be interesting to examine wether the perspectives highlighted here are unique to WFN females as a majority of the sample was female. Moreover, it would be important to elucidate whether these perspectives differ across minority cultures and are not simply shaped by socioeconomic factors.

Overall, this study is an important first step in understanding the physical activity behaviors of First Nation populations in Canada from a social and cognitive perspective.

Research like this will provide more resources for practitioners and health promotion campaigns to increase the health of First Nation peoples in Canada.

References

Ainsworth, B.E., Haskell, W.L., Whitt, M.C., Irwin, M.L., Swartz, A.M., Strath, S.J. et al. (2000). Compendium of physical activities: An update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise, 32*(9), S498-504.

Ainsworth, B.E., Irwin, M., Addy, C., Whitt, M., & Stolarczyk, L. (1999). Moderate physical activity patterns of minority women: The Cross-Cultural Activity Participation Study., *Journal of Women's Health & Gender-Based Medicine, 8*, 805-13.

Ainsworth, B., Richardson, M., Jacobs, D., & Leon, A. (1993). Gender differences in physical activity. *Women in Sport and Physical Activity, 2*, 1.

Ajzen, I. (1988). *Attitudes, personality and behavior*. Milton Keynes: Open University Press.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I. (2002). *Constructing a TpB Questionnaire: Conceptual and Methodological Considerations*, from http://www.people.umass.edu/aizen/tpb.html

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84*, 888-918.

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracin, B.T. Johnson, & M.P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 173-221). Mahwah, NJ:Erlbaum.

Anand, S. S., Yusuf, S., Jacobs, R., Davis, A. D., Yi, Q., Gerstein, H., et al. (2001). Risk factors, atherosclerosis, and cardiovascular disease among Aboriginal people in Canada: the Study of Health Assessment and Risk Evaluation in Aboriginal Peoples (SHARE-AP). *Lancet, 358*(9288), 1147-1153.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: a meta-analytic review. *The British journal of social psychology / the British Psychological Society, 40(Pt) 4*, 471-499.

Ball, J. (2005). Nothing about us without us: Restorative research partnerships involving Indigenous children and communities in Canada. In A. Farrell (Ed), *Ethical Research with Children and Those Around Them.* (pp. 81-96). London: Open University Press/McGraw-Hill.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review, 84*, 191-215.

Bandura, A. (1998). Health promotion from the perspective of Social Cognitive Theory. *Psychology and Health, 13,* 623-49.

Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-82.

Bauman, A.E. (2004). Updating the evidence that physical activity is good for health: An epidemiological review 2000-2003. *Journal of Science and Medicine in Sport, 7*(1) Suppl., 6-19.

Biddle, S. J. H., & Nigg, C. R. (2000). Theories of exercise behavior. *International Journal of Sport Psychology, 31*(2), 290-304.

Blanchard, C., Rhodes, R., Nehl, E., Fisher, J., Sparling, P, and Courneya, K. (2003). Ethnicity and the Theory of Planned Behavior in the exercise domain. *American Journal of Health Behavior, 26*(6), 579-591.

Blue, C. L. (1995). The predictive capacity of the theory of reasoned action and the theory of planned behavior in exercise research: an integrated literature review. *Research in Nursing & Health, 18*(2), 105-121.

British Columbia Statistics. (2001) *Statisitical Profile of Aboriginal Peoples 2001 with Emphasis on Children, Labour Market, and Post-Secondary Education Issues.* Retrieved July 5, 2006, from: http://www.bcstats.gov.bc.ca/DATA/cen01/abor/CR08.pdf

Broussard, B. A., Sugarman, J. R., Bachman-Carter, K., Booth, K., Stephenson, L., Strauss, K., et al. (1995). Toward comprehensive obesity prevention programs in Native American communities. *Obesity Research, 3 Suppl 2*, 289s-297s.

Brunet, S., Plotnikoff, R.C., Raine, K., & Courneya, K. (2005). Physical activity of Aboriginals with type 2 diabetes: An exploratory study. *Ethnicity & Disease, 15,* 256-66.

Buehler, J.A. (1992). Traditional Crow Indian health beliefs and practices: Toward a grounded theory. *Journal of Holistic Nursing, 10*(1), 18-33.

Bull, F., Eyler, A., King, A., & Brownson, R. (2001). Stage of readiness to exercise in ethically diverse women: a U.S. survey. *Medicine and Science in Sports and Exercise, 33*(7), 1147-1156.

Canadian Society for Exercise Physiology. (2002). *Physical Activity Readiness Questionnaire (Revised).* Retrieved January 12, 2005 from http://www.csep.ca/pdfs/par-q.pdf.

Canadian Fitness and Lifestyle Reasearch Institute. (2001). *2001 Physical Activity Monitor*. Retrieved February 14, 2004, from http://www.cflri.ca/cflri/pa/surveys/2001survey/2001survey.html

Castellano, M.B. (2004). Ethics of Aboriginal research. *Journal of Aboriginal Health, 1,* 98-114.

Coble, J.D. & Rhodes, R.E., (2006). Physical activity and Native Americans: A review. *American Journal of Preventive Medicine, 31*(1), 36-46.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-9.

Cole, P. (2002). aboriginalizing methodology: considering the canoe. *Qualitative Studies in Education, 15*(4), 447-59.

Conner, M., & Armitage, C.J. (1998). Extending the Theory of Planned Behavior: A review and avenues for further research. *Journal of Applied Social Psychology, 28*(15), 1429-64.

Craig, C. L., Russell, S. J., Cameron, C., & Bauman, A. (2004). Twenty-year trends in physical activity among Canadian adults. *Canadian Journal of Public Health, 95*(1), 59-63.

Creswell, J.W. (2003). Research Design. *Qualitative, Quantitative, and Mixed Methods Approaches.* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Cuaderes, E.T., Parker, D., & Burgin, C.E. (2004). Leisure time physical activity in adult Native Americans. *Southern Online Journal of Nursing Research, 1*(5), 1-18.

Denny, C. H., Holtzman, D., & Cobb, N. (2003). Surveillance for health behaviors of American Indians and Alaska Natives. Findings from the Behavioral Risk Factor Surveillance System, 1997-2000. *MMWR Surveillance summaries : Morbidity and mortality weekly report Surveillance summaries / CDC, 52*(7), 1-13.

Downs, D.S. & Hausenblas, H.A. (2005). Elicitation studies and the theory of planned behavior: A systematic review of exercise beliefs. *Psychology of Sport & Exercise, 6*, 1-31.

Dzewaltowski, D. A., Noble, J. M., & Shaw, J. M. (1990). Physical activity participation: Social cognitive theory versus the theories of reasoned action and planned behavior. *Journal of Sport & Exercise Psychology, 12*(4), 388-405.

Esparza, J, Fox, C., Harper, I.T., Bennett, P.H., Schulz, L.O., Valencia, M.E., & Ravussin, E. (2000) Daily energy expenditure in Mexican and USA Pima Indians: Low physical activity as a possible cause of obesity. *International Journal of Obesity and Related Metabolic Disorders,* 24(1), 55-9.

Eyler, A. A., Baker, E., Cromer, L., King, A. C., Brownson, R. C., & Donatelle, R. J. (1998). Physical activity and minority women: a qualitative study. *Health education & behavior : the official publication of the Society for Public Health Education, 25*(5), 640-652.

Fischer, I. D., Brown, D. R., Blanton, C. J., Casper, M. L., Croft, J. B., & Brownson, R. C. (1999). Physical activity patterns of Chippewa and Menominee Indians: the Inter-Tribal Heart Project. *American journal of preventive medicine, 17*(3), 189-197.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fitzgerald, S.J., Kriska, A.M., Pereira, M.A., & deCourten, M.P.(1997). Associations among physical activity, television watching, and obesity in adult Pima Indians. *Medicine and Science in Sports and Exercise,*29(7), 910-5.

Gagne, C. and Godin, G. (2000). The Theory of Planned Behavior: Some measurement issues concerning belief based variables. *Journal of Applied Social Psychology, 30*(10), 2173-2193.

Godin, G., & Shephard, R. J. (1985). A simple method to assess exercise behavior in the community. *Canadian journal of applied sport sciences Journal canadien des sciences appliquees au sport, 10*(3), 141-146.

Gohdes, D., Kaufman, S., & Valway, S. (1993). Diabetes in American Indians. An overview. *Diabetes care, 16*(1), 239-243.

Going, S. B., Levin, S., Harrell, J., Stewart, D., Kushi, L., Cornell, C. E., et al. (1999). Physical activity assessment in American Indian schoolchildren in the Pathways study. *The American journal of clinical nutrition, 69(4) Suppl*, 788S-795S.

Goldberg, H. I., Warren, C. W., Oge, L. L., Helgerson, S. D., Pepion, D. D., LaMere, E., et al. (1991). Prevalence of behavioral risk factors in two American Indian populations in Montana. *American journal of preventive medicine, 7*(3), 155-160.

Gollwitzer, P.M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*(7), 493-503.

Greenbaum, T. (1998). *The handbook for focus group research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Hagger, M. S., Chatzisarantis, N. L. D., & Biddle, S. J. H. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport & Exercise Psychology, 24*(1), 3-32.

Harnack, L., Story, M., Holy Rock, B. (1999). Diet and physical activity patterns of Lakota Indian adults. *Journal of the American Dietetic Association, 99*(7), 829-835.

Harris, S. B., Gittelsohn, J., Hanley, A., Barnie, A., Wolever, T. M., Gao, J., et al. (1997). The prevalence of NIDDM and associated risk factors in native Canadians. *Diabetes care, 20*(2), 185-187.

Harwell, T. S., Moore, K., McDowall, J. M., Helgerson, S. D., & Gohdes, D. (2003). Cardiovascular risk factors in Montana American Indians with and without diabetes. *American journal of preventive medicine, 24*(3), 265-269.

Hay, J., & Shephard, R. (1998). Perceptions and Patterns of Physical Activity: A Comparison of Mohawk/Cayuga and Non-Native Adolescents. *American Journal of Human Biology, 10*, 629-635.

Health Canada. (2003) Retrieved February 18, 2004, from http://www.hc-sc.gc.ca/hppb/fitness/definitions.html

Health Canada. (2003). *Handbook for Canada's Physical Activity Guide to Active Healthy Living*. Retrieved February 18, 2004, from http://www.phac-aspc.gc.ca/pau-uap/fitness/downloads.html

Health Canada. (1999). *A Second Diagnostic on the Health of First Nations and Inuit People in Canada*. Ottawa, ON: First Nation and Inuit Health Branch.

Heesch, K., Brown, D., & Blanton, C. (2000). Perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups. *Women & Health, 30*(4), 61-76.

Henderson, K.A. & Ainsworth, B.E. (2000a). Sociocultural perspectives on physical activity in the lives of older African American and American Indian women: A Cross-Cultural Activity Participation Study. *Women & Health, 31*(1), 1-20.

Henderson, K.A. & Ainsworth, B.E. (2000b). Enablers and constraints to walking for older African American and American Indian women: The Cultural Activity Participation Study. *Research Quarterly for Exercise and Sport, 71*(4), 313-21.

Henderson, K.A. & Ainsworth, B.E. (2001). Physical activity and human development among older native American women. *Journal of Aging & Physical Activity 9,* 285-99.

Henderson, K.A. & Ainsworth, B.E. (2003). A synthesis of perceptions about physical activity among older African American and American Indian women. *American Journal of Public Health, 93*(2), 313-17.

Hill, J.O., Wyatt, H.R., Reed, G.W., & Peters, J.C. (2003). Obesity and the environment: Where do we go from here? *Science, 299*(5608), 853-5.

Im, E. (2001). Nursing research on physical activity: A feminist critique. *International Journal of Nursing Studies, 38,* 185-94.

Indian and Northern Affairs Canada (1996). *Report of the Royal Commission on Aboriginal People.* Ottawa, ON: Indian and Northern Affairs Canada.

Indian and Northern Affairs Canada. (2006). *First Nation Profiles*. Retrieved June 30, 2006 from: http://sdiprod2.inac.gc.ca/FNProfiles/

Irwin, M.L., Mayer-Davis, E.J., Addy, C.L., Pate, R.R., Durstine, J.L., Stolarczyck, L.M. & Ainsworth, B.E. (2000). Moderate-intensity physical activity and fasting insulin levels in women: The Cross-Cultural Activity Participation Survey. *Diabetes Care, 23*(4), 449-54.

Howard, B. V., Lee, E. T., Cowan, L. D., Devereux, R. B., Galloway, J. M., Go, O. T., et al. (1999). Rising tide of cardiovascular disease in American Indians. The Strong Heart Study. *Circulation, 99*(18), 2389-2395.

Jacobs, D.R., Ainsworth, B.E., Hartman, T.J., & Leon, A.S. (1993). A simultaneous evaluation of 10 commonly used physical activity questionnaires. *Medicine and Science in Sports and Exercise, 25*(1), 81-91.

Jones, D. A., Ainsworth, B. E., Croft, J. B., Macera, C. A., Lloyd, E. E., & Yusuf, H. R. (1998). Moderate leisure-time physical activity: who is meeting the public health recommendations? A national cross-sectional study. *Archives of family medicine, 7*(3), 285-289.

Katzmarzyk, P. T., & Malina, R. M. (1998). Obesity and relative subcutaneous fat distribution among Canadians of First Nation and European ancestry. *International journal of obesity and related metabolic disorders : journal of the International Association for the Study of Obesity, 22*(11), 1127-1131.

Keller, C., Fleury, J., Gregor-Holt, N., & Thompson, T. (1999). Predictive ability of social cognitive theory in exercise research: An integrated literature review. *Online Journal of Knowledge Synthesis for Nursing, 6*(2),

Kriska, A.M., Hanley, A.J., Harris, S.B., & Zinman, B. (2001). Physical activity, physical fitness, and insulin and glucose concentrations in an isolated Native Canadian population experiencing rapid lifestyle change. *Diabetes Care, 24*(10), 1787-92.

Kriska, A.M., Knowler, W.C., LaPorte, R.E., Drash, A. L., Wing, R. R., Blair, S. N., et al. (1990). Development of questionnaire to examine relationship of physical activity and diabetes in Pima Indians. *Diabetes care, 13*(4), 401-411.

Lamont, M.J., Blair, S.N., & Church, T.S. (2005). Physical activity and diabetes prevention. *Journal of Applied Physiology, 99*(3), 1205-13.

Lovelock, C., & Weinberg, C. (1989). *Public and Non-Profit Marketing* (2nd ed.). Danvers, MASS: Boyd and Fraser Publications.

Marcus, B., & Simkin, L. (1994). The transtheoretical model: applications to exercise behavior. *Medicine and science in sports and exercise, 26*(11), 1400-1404.

Marshall, C., & Rossman, G. (1989). *Designing qualitative research*. Newbury Park, CA: Sage Publications.

Martin, J.J., Kulinna, P.H., McCaughtry, N., Cothran, D., Dake, J., & Fahoom, G. (2005). The Theory of Planned Behavior: Predicting physical activity and cardiorespiratory fitness in African American children. *Journal of Sport & Exercise Psychology, 27*(4), 456-469.

Mâsse, L. C., Ainsworth, B. E., Tortolero, S., Levin, S., Fulton, J. E., Henderson, K. A., et al. (1998). Measuring physical activity in midlife, older, and minority women: issues from an expert panel. *Journal of women's health / the official publication of the Society for the Advancement of Women's Health Research, 7*(1), 57-67.

McDonald, D., & McAvoy, L. (1997). Native Americans and Leisure: State of the Research and Future Directions. *Journal of Leisure Research, 29*(2), 145-166.

Miller, O.A. (1956). The magical number seven plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63*, 81-97.

Myers, H., Kagawa-Singer, M., Kumanyika, S., Lex, B., & Markides, K. (1995). Panel III: Behavioral risk factors related to chronic diseases in ethnic minorities. *Health Psychology, 14*(7), 613-621.

Norton, I.M. & Manson, S.M. (1996). Research in American Indian and Alaska Native Communities: Navigating the cultural universe of values and process. *Journal of Consulting and Clinical Psychology, 64*(5), 856-60.

Pate, R. R., Pratt, M., Blair, S. N., Haskell, W. L., Macera, C. A., Bouchard, C., et al. (1995). Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA : the journal of the American Medical Association, 273*(5), 402-407.

Plotnikoff, R. C., Hotz, S. B., Birkett, N. J., & Courneya, K. S. (2001). Exercise and the transtheoretical model: a longitudinal test of a population sample. *Preventive medicine, 33*(5), 441-452.

Prochaska, J., & Marcus, B. (1994). The transtheoretical model: Applications to exercise. In R. K. Dishman (Ed.), *Advances in exercise adherence.* (pp. 161-180). Champaign, IL, England: Human Kinetics Publishers.

Prochaska, J., & Velicer, W. (1997). The transtheoretical model of health behavior change. *American journal of health promotion : AJHP, 12*(1), 38-48.

Rhodes, R.E., Blanchard, C.M., Matheson, D.H., & Coble, J.D. (2005). Disentangling motivation, intention and planning in the physical activity domain. *Psychology of Sport and Exercise, 7*(1), 15-27.

Rhodes, R.E. & Courney, K. (2003). Investigating multiple components of attitude, subjective norm, and perceived control: An examination of the theory of planned behavior in the exercise domain. *The British Journal of Social Psychology, 42*(1), 129-46.

Sanchez, T.R., Plawecki, J.A., & Plawecki, H.M. (1996). The delivery of culturally sensitive health care to Native Americans. *Journal of Holistic Nursing, 14*(4), 295-307.

Schnarch, B. (2004). Ownership, control, access, and possession (OCAP) or self-determination applied to research: A Critical analysis of contemporary First Nations research and some options for First Nation communities. *Journal of Aboriginal Health, 1*, 80-95.

Seefeldt, V., Malina, R.M., & Clark, M.A. (2002). Factors affecting levels of physical activity in adults. *Sports Medicine, 32*(3), 143-68.

Smith, L. (1999). *Decolonizing Methodologies: Research and Indigenous Peoples.* London: Zed Books.

Statistics Canada. (1999). *National Population Health Survey*. Ottawa, ON.

Steinhauer, E. (2002). Thoughts on an Indigenous research methodology. *Canadian Journal of Native Education, 26*(2), 69-81.

Stevens, J., Cornell, C. E., Story, M., French, S. A., Levin, S., Becenti, A., et al. (1999). Development of a questionnaire to assess knowledge, attitudes, and behaviors in American Indian children. *The American journal of clinical nutrition, 69(4) Suppl*, 773S-781S.

Stolarczyck, L.M., Gilliland, S.S., Lium, D.J., Owen, C.L., Perez, G.E., Kriska, A.M. et al., (1999). Knowledge, attitudes and behaviors related to physical activity among Native Americans with diabetes. *Ethnicity & Disease, 9*, 59-69.

Story, M., Evans, M., Fabsitz, R. R., Clay, T. E., Holy Rock, B., & Broussard, B. (1999). The epidemic of obesity in American Indian communities and the need for childhood obesity-prevention programs. *The American journal of clinical nutrition, 69(4) Suppl*, 747S-754S.

Sugarman, J. R., Warren, C. W., Oge, L., & Helgerson, S. D. (1992). Using the Behavioral Risk Factor Surveillance System to monitor year 2000 objectives among American Indians. *Public health reports, 107*(4), 449-456.

Sutton, S. (2002). Using social cognition models to develop health behaviour interventions: Problems and assumptions. In D. Rutter & L. Quine (Eds), *Changing Health Behaviour Intervention and Research with Social Cognition Models* (pp.193-208). Buckingham: Open University Press.

Thompson, J. L., Allen, P., Cunningham-Sabo, L., Yazzie, D. A., Curtis, M., & Davis, S. M. (2002). Environmental, policy and cultural factors related to physical activity in sedentary American Indian women. *Women & Health, 36*(2), 59-74.

Thompson, J. L., Wolfe, V. K., Wilson, N., Pardilla, M. N., & Perez, G. (2003). Personal, social, and environmental correlates of physical activity in Native American women. *American journal of preventive medicine, 25(3) Suppl 1*, 53-60.

Trost, S.G., Owen, N., Bauman, A.E., Sallis, J.F., & Brown, W. (2002) Correlates of adults' participation in physical activity: A review and update. *Medicine & Science in Sports & Exercise, 34*(12), 1996-2001.

Trost, S.G., Pate, R.R., Dowda, M., Ward, D.S., Felton, G., & Saunders, R (2002). Psychological correlates of physical activity in White and African-American girls. *The Journal of Adolescent Health, 31*(3), 226-33.

Tudor-Locke, C., Henderson, K.A., Wilcox, S., Cooper, R.S., Durstine, J.L., & Ainsworth, B.E. (2003). In their own voices: Definitions and interpretations of physical activity. *Women's Health Issues, 13,* 194-9.

USDHHS. (1996). *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

USDHHS. (2003). Diabetes prevalence among American Indians and Alaska Natives and the overall population -- United States, 1994-2002. *MMWR: Morbidity and Mortality Weekly Report, 52*(30), 702-704.

Waldram, J., Herring, D., & Young, T. (1995). *Aboriginal health in Canada: Historical, cultural, and epidemiological perspectives*. Toronto, ON: University of Toronto Press.

Whitt, C., Levin, S., Ainsworth, B., & Dubose, K. (2003). Evaluation of a Two-Part Survey Item to Assess Moderate Physical Activity: The Cross-Cultural Activity Participation Study., *Journal of Women's Health* (Vol. 12, pp. 203): Mary Ann Liebert, Inc.

Wilcox, S., Castro, C., King, A. C., Housemann, R., & Brownson, R. C. (2000). Determinants of leisure-time physical activity in rural compared with urban older and ethnically diverse women in the United States. *Journal of Epidemiology & Community Health, 54*(9), 667-672.

Yurgalevitch, S.M., Kriska, A.M., Welty, T.K., Go, O. Robbins, D.C, & Howard, B.V. (1998). Physical activity and lipids and lipoproteins in American Indians ages 45-57. *Medicine and Science in Sports and Exercise, 30*(4), 543-9.

Zephier, E., Himes, J. H., & Story, M. (1999). Prevalence of overweight and obesity in American Indian School children and adolescents in the Aberdeen area: a population study. *International journal of obesity and related metabolic disorders : journal of the International Association for the Study of Obesity, 23 Suppl 2*, S28-30.

Appendix A: Letter of Support From the Westbank First Nation

Wes Zawertailo
Recreation Coordinator
Westbank First Nation
1920 Quail Lane
Westbank, BC V4T 2H3

April 20, 2004

Human Research Ethics Board
Office of Research Services
University of Victoria
Room A240 University Centre
Victoria, BC V8W 3P2

Dear Human Research Ethics Board,

Re: Letter of Support – James Coble Masters Thesis Project

We appreciate the opportunity to support James Coble in his research efforts to study the behaviors and motivations of WFN adults to engage in physical activity. Our department is always interested and willing to collaborate in research endeavors that may help us meet the needs of our community members. We understand that is a major undertaking and responsibility are willing to do what we can to support this research.

We believe in and appreciate James's desires to engage in community initiatives and bring his graduate knowledge back to the community. Research such as this would be invaluable to our program planning and funding requests. We look forward to assisting James in this very worthwhile project.

Thank you for your time and attention.

Respectfully,

Wes Zawertailo
Recreation Coordinator
Westbank First Nation

Appendix B: Participant Information and Consent Forms

"Physical Activity Behaviors and Motivations in an Adult First Nation Population"

Introduction

A research project is being undertaken by James Coble, a graduate student at the University of Victora, and the Westbank First Nation (WFN) Recreation Department. You are being invited to participate in this project to comment on your personal experiences with physical activity. Very little research exists in this area. The more that we can learn about the physical activity behaviors of the Westbank First Nation, the more we can provide opportunities to improve the health of the community. It is hoped the knowledge that you provide will help inform the WFN Recreation Department on how they can better serve you and meet your recreation needs. All adult WFN members have been sent this survey by the recreation department because we want the opinions and beliefs of as many WFN members as possible. Only the WFN administration and its departments are permitted to access WFN member contact information. Therefore, your name and contact information has not and will not be released to anyone other than the WFN.

You are being asked to fill out this survey and return the completed survey in the prepaid postage envelope contained in this package to the address indicated. Specifically, this survey will examine the following:

- What types of physical activities do you do?
- What factors influence you to do physical activity?

If you meet the following criteria and are willing to volunteer your time we would love to have you participate in our research project. We are looking for:

1. Westbank First Nation band members.
2. Members who are able to do physical activity if they wanted to (such as walking, gardening, playing any sports, jogging etc.).
3. Members over the age of 18.

Project Information and Consent

Your participation is entirely voluntary:
You can refuse to answer any question on the survey. You can refuse to send the survey back to the researcher. You can refuse to participate. There are no explanations required from you and there will be no consequences for choosing any of the above options.

Procedure:
If you decide to fill out the survey, your involvement will take up to 30 minutes of your time. By returning this survey it is understood that you have given consent to participate. Once you have completed the survey please use the envelope provided and return the survey to the address indicated on the return envelope. The return envelope has been prepaid so you do not have to provide the postage. You can also return the survey to the WFN Recreation Department in person. If you wish to participate in group discussions at a later date please indicate your interest by answering the appropriate question at the end of this survey.

Inconveniences, Benefits and Risks:
The time associated with your participation is the only known inconvenience associated with this study.
The more that we can learn about the physical activity behaviors of the WFN members, the more the WFN Department can provide opportunities to improve the health of the community. The questions that will be asked are simply about your beliefs as they relate to physical activity. As such, there are no known risks associated with your participation.

Confidentiality and Access to Information:
The WFN Recreation Department has agreed to deliver the survey and participate in this research project. You will not be required to put your name on the survey unless you indicate that you wish to participate in group discussions. The survey portion of the research will be strictly anonymous as no names will be mentioned and all results will be interpreted and displayed as group data only. Once the completed surveys are returned to the researcher (James Coble), all data will be kept in a locked cabinet in the Behavioral Medicine Research Laboratory at the University of Victoria. The researcher will not know which survey is yours because we do not ask for your name and, as a result, any information that we gather from you cannot

be withdrawn from the study once you return the survey. If you indicate that you are willing to participate in group discussions, you will be required to give your name and contact information so the researcher can contact you to set up an appropriate time and date for the group discussions. Again, your confidentiality will be protected and your contact information is not known to anyone other than the Westbank First Nation.

The preservation and protection of the data and the procedures for maintaining or destroying your contact information and data during and after the research process is subject to the Ethical Guidelines set out by the University of Victoria and will also require Westbank First Nation approval.

Publication of Results:
In consultation with the WFN Chief and Council, the results of this study may be used in the following ways:

- A visual presentation, a research report and written recommendations to the WFN Chief and Council, the WFN Recreation Department and/or WFN community at large.
- As a part of the researcher's Master's Thesis.
- As a report to be presented at scholarly conferences
- As a published article in a professional peer reviewed journal

If you have any questions or concerns about your rights or treatment as a participant or any of the ethical procedures for this study please feel free to contact:

- James Coble, Investigator, University of Victoria: (250) 385-6994
- WFN Chief and Council: (250) 769-4999
- Dr. Ryan Rhodes, Graduate Supervisor, University of Victoria: (250) 721-8384
- Associate Vice-President, Research at the University of Victoria: (250) 472-4565.

Participant Consent Statement

I understand that I do not waive my legal right by returning this survey. I understand the contents of the consent form and the proposed procedures. I have had the opportunity to ask questions and have received satisfactory answers to all inquiries regarding this investigation.

By returning the enclosed survey I have read the information above and I have agreed to participate in the project.

Please keep this consent form for your records

"Physical Activity Behaviors and Motivations in an Adult First Nation Population"

Focus Group Discussions

Introduction

A collaborative research project is being undertaken by James Coble, a graduate student at the University of Victora, and the Westbank First Nation Recreation Department. You are being invited to participate in this project to comment on your personal experiences with physical activity. Very little research exists in this area. The more that we can learn about the physical activity behaviors of the Westbank First Nation, the more we can provide opportunities to improve the health of the community. It is hoped the knowledge that you provide will help inform the Westbank First Nation recreation department on how they can better serve you and meet your recreation needs.

You are being asked to take part in focus group discussions as a result of your completion of the survey sent to you previously. Specifically, these discussions will examine the following:

- What are your beliefs and feelings about physical activity?
- What factors influence you to do physical activity?

Project Information and Consent

Your participation is entirely voluntary
You are free to withdraw from the study at any time even after you have given your consent to participate. If you participate in the group discussions, you can refuse to answer any question at any time during the focus groups. There are no explanations required from you and there will be no consequences for choosing any of the above options.

Procedure
If you decide to volunteer your time by participating in group discussions, these discussions will last between 60 to 90 minutes. The researcher will be asking questions in a group setting regarding your beliefs about doing physical activity. A copy of the questions will be provided for your convenience. Ongoing consent for the group discussions will be required by signing this consent form below.

Audio-taping
With your permission, the group discussions will be audio-taped so that I can use the information that you provide. Please recognize that notes will be taken during the discussions and will be transcribed for further analysis. Your input and information are highly valued so I want to be as accurate as possible. Only the researcher will have access to the tapes, transcripts, and consent forms. After the research has concluded, the data will be kept in a secured, locked cabinet. If we use your exact words we will identify you by name only if you provide consent for the release of your name prior to the

group discussions. Further, if you agree to be named, you will be consulted and have editorial control of what is quoted prior to any of the results being reported.

Inconveniences, Benefits and Risks
The time associated with your participation is the only known inconvenience associated with this study.
The more that we can learn about the physical activity behaviors of the Westbank First Nation, the more we can provide opportunities to improve the health of the community. It is hoped the knowledge that you provide will help inform the Westbank First Nation recreation department on how they can better serve you and meet your recreation needs. The questions that will be asked are simply about your beliefs as they relate to physical activity. As such, there are no known risks associated with your participation.

Compensation
If you decide to participate in the group discussions, refreshments and food will be provided for the participants prior to the start of the discussions.

Confidentiality and Access to Information
Your anonymity will be partially protected. Your name and personal information has not and will not be released to anyone other than the researcher. Please recognize that you may not be anonymous to other participants of the focus groups, and that they will hear what you say. It would be greatly appreciated if all participants would respect the confidentiality and anonymity of other participants. All results will be interpreted and displayed as group data only. No individual cases will be identified unless the participant indicates otherwise. While taking notes, numbers will be used to identify the information obtained in the focus groups. Therefore, the researcher will be able to withdraw any information that you have provided if you wish to withdraw from the study. The preservation and protection of the data and the procedures for maintaining or destroying the data during and after the research process is subject to the Ethical Guidelines set out by the University of Victoria and will also require Westbank First Nation approval. Only the researcher and the Westbank First Nation will have access to participant information. All data will be kept in a locked cabinet in the Behavioral Medicine Research Laboratory at the University of Victoria.

Publication of Results
In consultation with the WFN Chief and Council, the results of this study may be used in the following ways:

- A visual presentation, a research report and written recommendations to the WFN Chief and Council, the WFN Recreation Department and/or WFN community at large.
- As a part of the researcher's Master's Thesis.
- As a report to be presented at scholarly conferences
- As a published article in a professional peer reviewed journal

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If you have any questions or concerns about your rights or treatment as a participant or any of the ethical procedures for this study please feel free to contact:

- James Coble, Investigator, University of Victoria: (250) 385-6994
- WFN Chief and Council: (250) 769-4999
- Dr. Ryan Rhodes, Graduate Supervisor, University of Victoria: (250) 721-8384
- Associate Vice-President, Research at the University of Victoria: (250) 472-4565.

I understand that I do not waive my legal right by signing the consent form. I understand the contents of the consent form and the proposed procedures. I have had the opportunity to ask questions and have received satisfactory answers to all inquiries regarding this investigation.

I have read the information above and I agree to participate in the project:

Print Name	Signature
Date	Witness (may be the researcher)

A copy of this consent will be left with you.

Identity Release Consent Form

Physical Activity Behaviors and Motivations in an Adult First Nation Population

Please read the following information carefully and completely. If you wish, this information can be read to you. If you have any concerns, please ask me any questions before giving consent.

I, _____ do hereby consent to the use of my name for the purposes of quoting part of my comments obtained through focus group interviews or questionnaires to which I have already consented my participation.

I understand that giving permission for the use of my name for the purpose of quoting information means that my identity will be known and listed in documents, including but not limited to: reports, professional and academic publications, and presentations.

I further understand that giving consent releases the Physical Activity Behaviors and Motivations in an Adult First Nation Population project from all responsibility to maintain anonymity and confidentiality regarding my participation in the study.

If you have any questions or require further information about this study, please contact:

James Coble, Principal Researcher
School of Physical Education
University of Victoria
PO Box 3015 STN CSC,
Victoria, BC V8W 3P1
Canada
Tel: (250) 385-6994
Email: jcoble@uvic.ca

_____ _____

Print Name Signature

I confirm that the items in this consent form have been read and discussed with the participant; any questions by the participant have been discussed to his or her satisfaction, and the participant has given me his/her consent.

_____ _____

Signature of Researcher Date

Appendix C: Survey Reminder and Donation Notice

University of Victoria

Final Survey Reminder

This is a friendly reminder asking for your support in completing the research package that was recently mailed to you. **People who have received this survey have said that it only takes 10 minutes to complete.** With your much-needed help, we will be closer to understanding health issues that are important to our community. Specifically, the information will be very helpful in designing specific motivational materials for people interested in starting to become physically active. **If you have already mailed the completed questionnaire, please accept our apology and disregard this notice.** If you have yet to participate and wish to do so, we would appreciate you completing the survey at your earliest convenience. **The researcher will be happy to donate $5.00 to the WFN Recreation Department for youth programs and/or equipment for every survey that is completed and returned.** In this way your participation will benefit the WFN community. We have attached an additional copy of the questionnaire in case the previous one has been misplaced. On behalf of James Coble, WFN member, and the WFN Recreation Department, we thank you for your time and effort.

Sincerely,

Behavioural Medicine Laboratory UVic

James Coble
University of Victoria
jcoble@uvic.ca
(250) 472-5288

Appendix D: First Nation Motivations for Engaging in Physical Activity Survey

"First Nation Motivations for Engaging in Physical Activity"

James Coble
University of Victoria
(250) 385-6994

WFN Recreation Department
Westbank First Nation

Questionnaire Instructions

In this survey, you will be asked a series of questions about your beliefs towards regular physical activity. There are no right or wrong answers and all we ask is that you provide responses that are as honest and accurate as possible. The survey should take about 15-30 minutes of your time. It is important to answer all questions so that we can include your responses in our analyses. If you have any questions please feel free to forward them to the James Coble.

Definition of Regular Physical Activity

All of the questions in this survey ask you about regular physical activity. Here, we define physical activity as all leisure and non-leisure body movement produced by our muscles resulting in energy loss. Regular physical activity is any physical activity performed at least 4 times per week, for at least 30 minutes in length at a moderate intensity (i.e. not exhausting, light sweating). Some examples of moderate physical activities are brisk walking, biking, raking leaves, swimming, and dancing.

The following question asks you to rate how you feel about regular physical activity on 6 different scales. Please pay careful attention to the words and descriptors for every possible response and place an "X" over the line that best represents how you feel about regular physical activity. Please answer all items from a) to f) based on question 1.

EXAMPLE:

1. For me, regular sleeping over the next month would be:

a)	_____	_____	_____	_____	_____	__X__	_____
	extremely harmful	*quite harmful*	*slightly harmful*	*neutral*	*slightly beneficial*	*quite beneficial*	*extremely beneficial*

1. For me, regular physical activity over the next month would be:

a)	_____	_____	_____	_____	_____	_____	_____
	extremely harmful	quite harmful	slightly harmful	neutral	slightly beneficial	quite beneficial	extremely beneficial
b)	_____	_____	_____	_____	_____	_____	_____
	extremely useless	quite useless	slightly useless	neutral	slightly useful	quite useful	extremely useful
c)	_____	_____	_____	_____	_____	_____	_____
	extremely unimportant	quite unimportant	slightly unimportant	neutral	slightly important	quite important	extremely important
d)	_____	_____	_____	_____	_____	_____	_____
	extremely unenjoyable	quite unenjoyable	slightly unenjoyable	neutral	slightly enjoyable	quite enjoyable	extremely enjoyable
e)	_____	_____	_____	_____	_____	_____	_____
	extremely boring	quite boring	slightly boring	neutral	slightly fun	quite fun	extremely fun
f)	_____	_____	_____	_____	_____	_____	_____
	extremely painful	quite painful	slightly painful	neutral	slightly pleasurable	quite pleasurable	extremely pleasurable

This next set of questions ask you to rate how other people in your life may feel about you engaging in regular physical activity over the next month. Pay careful attention to each scale and place an "X" over the line that best represents what you think about their feelings. Please answer all items from a) to c) based on question 2.

2. I think that if I were to engage in regular physical activity over the next month, most people who are important to me would be:

a) _____	_____	_____	_____	_____	_____	_____	
extremely disapproving	quite disapproving	slightly disapproving	neutral	slightly approving	quite approving	extremely approving	
b) _____	_____	_____	_____	_____	_____	_____	
extremely unsupportive	quite unsupportive	slightly unsupportive	neutral	slightly supportive	quite supportive	extremely supportive	
c) _____	_____	_____	_____	_____	_____	_____	
extremely discouraging	quite discouraging	slightly discouraging	neutral	slightly encouraging	quite encouraging	extremely encouraging	

This next set of questions ask you to rate how active you think other people in your life are likely to be over the next month. Pay careful attention to the words and descriptors at the end of each scale and place an "X" over the line that best represents their physical activity levels.

3. I think that over the next month, most people who are important to me will themselves be:

_____	_____	_____	_____	_____	_____	_____
extremely inactive	quite inactive	slightly inactive	neutral	slightly active	quite active	extremely active

4. I think that over the next month, most people who are important to me will engage in regular physical activity.

_____	_____	_____	_____	_____	_____	_____
extremely disagree	quite disagree	slightly disagree	neutral	slightly agree	quite agree	extremely agree

5. I think that over the next month, the physical activity levels of most people who are important to me will be:

_____	_____	_____	_____	_____	_____	_____
extremely low	quite low	slightly low	neutral	slightly high	quite high	extremely high

This next set of questions ask you to rate how likely you feel it is that <u>you will be able</u> to engage in regular physical activity over the next month <u>if you were really motivated</u>. Pay careful attention to the words and descriptors at the end of each scale and place an "X" over the line that best represents your feelings.

6. If you were really motivated, how controllable would it be for you to engage in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely uncontrollable	quite uncontrollable	slightly uncontrollable	neutral	slightly controllable	quite controllable	extremely controllable

7. If you were really motivated, how easy or difficult would it be for you to engage in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely difficult	quite difficult	slightly difficult	neutral	slightly easy	quite easy	extremely easy

8. If you were really motivated, do you feel that the choice to engage in regular physical activity over the next month would be completely up to you?

_____	_____	_____	_____	_____	_____	_____
extremely disagree	quite disagree	slightly disagree	neutral	slightly agree	quite agree	extremely agree

9. If you were really motivated, how confident are you that you could engage in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely unconfident	quite unconfident	slightly unconfident	neutral	slightly confident	quite confident	extremely confident

10. If you were really motivated, do you feel you would have complete control over whether or not you engaged in physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely untrue	quite untrue	slightly untrue	neutral	slightly true	quite true	extremely true

11. If you were really motivated, how certain or uncertain would you be that you could engage in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely uncertain	quite uncertain	slightly uncertain	neutral	slightly certain	quite certain	extremely certain

This next set of questions asks you to rate how motivated you are to engage in regular physical activity over the next month. Pay careful attention to the words and descriptors at the end of each scale and place an "X" over the line that best represents your motivation.

12. How motivated are you to engage in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely unmotivated	quite unmotivated	slightly unmotivated	neutral	slightly motivated	quite motivated	extremely motivated

13. I strongly intend to do everything I can to engage in regular physical activity over the next month.

_____	_____	_____	_____	_____	_____	_____
extremely untrue	quite untrue	slightly untrue	neutral	slightly true	quite true	extremely true

14. How committed are you to engaging in regular physical activity over the next month?

_____	_____	_____	_____	_____	_____	_____
extremely uncommitted	quite uncommitted	slightly uncommitted	neutral	slightly committed	quite committed	extremely committed

15. I intend to engage in regular physical activity at a moderate intensity _____ times per week over the next month for _____ minutes each time.

(please write the number of times you do physical activity in the first space and the average amount of time spent doing physical activity each time in the second space)

For this next question, I would like you to recall your average weekly physical activity <u>over the past month</u>. When answering these questions please:

- consider your average over the past month.
- only count physical activity sessions that lasted 10 minutes or longer
- consider physical activities that you may have done during leisure time, at work or in the home
- note that the main difference between the three categories is the intensity of the exercise.
- please write the average number of times you do physical activity on the first line and the average amount of time spent doing physical activity each time on the second line

16. How many times per week on average did you do the following kinds of physical activity over the past month?

<u>EXAMPLE</u>:	*Times Per Week*	*Average Duration*
a. STRENUOUS	*4*	*45 minutes*

Duration	Times Per Week	Average
a. STRENUOUS (HEART BEATS RAPIDLY, SWEATING) (e.g., running, jogging, hockey, soccer, vigorous pow wow dancing, vigorous swimming, vigorous bicycling, vigorous aerobic dance classes, heavy weight training)	_____	_____
b. MODERATE EXERCISE (NOT EXHAUSTING, LIGHT SWEATING) (e.g., fast walking, baseball, tennis, easy bicycling, volleyball, easy pow wow dancing, easy swimming, downhill skiing, popular and folk dancing)	_____	_____
c. MILD EXERCISE (MINIMAL EFFORT, NO SWEATING) (e.g., easy walking, yoga, archery, fishing, bowling, lawn bowling, shuffleboard, horseshoes, golf, snowmobiling)	_____	_____

This part of the questionnaire is needed to help understand the characteristics of the people participating in the study. For this reason it is very important information. All information is held in strict confidence and if it is presented in a public setting, it will be done so using group data only.

17. Age: _____

18. Sex: Male: _____ Female: _____

19. Height/Weight: Height: _____ Weight: _____

20. Marital Status: Never Married: _____ Married/Common Law: _____

Separated/Divorce/Widowed: _____

21. Job Status: Homemaker: ____ Retired: _____ Paid full-time employment: ____

Paid part-time employment: _____ Temporarily Unemployed: _____

22. Family Income:

$20,000 or less: _____ (*check here if you do not feel comfortable sharing your income if less than $20,000*)

$5,001 to $10,000: _____

$10,001 to $20,000: _____

$20,001 to $40,000: _____

$40,001 to $75,000: _____

More than $75,000: _____

28. Has a doctor or nurse ever told you that you have had the following *(please check all that apply)*:

a) angina: yes: _____ no: _____

b) heart attack: yes: _____ no: _____

c) stroke: yes: _____ no: _____

d) high blood cholesterol: yes: _____ no: _____

e) high blood pressure: yes: _____ no: _____

f) diabetes: yes: _____ no: _____

If you answered yes to question f), which type?

Type 1:_____ Type 2: _____ Gestational: _____

For this next question, I would like to find out about the types of physical activities that you do. Please answer freely and honestly in the space provided. When answering this question remember that physical activity is any body movement produced by the muscles that uses more energy than is required for sitting (this can include activities during your free time like jogging, baseball and pow wow dancing or activities that you do at work or at home such as heavy lifting or chopping wood)

21. Please list all the types of physical activities that you engage in (feel free to include those activities that may be specific to First Nation tradition and culture).

_____

_____

_____

_____

_____

_____

_____

_____

Once you have completed the survey, please place it in the envelope and refer to the final question on the last sheet of paper provided in this package.

THANK YOU VERY MUCH!!!

Would you be willing to participate in focus group discussions? The topic of the interview discussions will be your attitudes and beliefs about physical activity.

NO:_____ YES:_____ (If yes please provide your contact information below)

Name:_____ Telephone (or email):_____

**It is possible that we may get more people than we need for the group discussions. Often times, when we interview several groups of people, comments and responses from the groups become repetitive or similar. Once the responses become repetitive or similar, then it is assumed that we have collected accurate and ample information and we no longer need to interview other people. Therefore, even if you have answered yes to this question, your participation may not be required for this part of the research project. That is, not everyone will be selected to participate in the focus group discussions.

Once you have answered the above question please place this paper along with the rest of the survey in the envelope and mail it to the address provided. Or, you can return the whole survey to the WFN Recreation Department in person.

The postage has been prepaid for your convenience.

THANK YOU VERY MUCH!!!

Appendix E: Focus Group Questions

Focus Group Interview Questions

Physical Activity – all leisure and non-leisure body movement produced by the skeletal muscles resulting in an increase in energy expenditure.

Physical Activity Behavior Questions

1) As a First Nation individual, tell me what physical activity means to you?
2) What does it mean to your culture? Does it have any meaning or importance?
3) What are some examples of physical activities that you engage in?
4) Do you do any physical activity that is a part of the First Nation tradition and culture?

Theory of Planned Behavior Questions

Behavioral Beliefs:

1) In general, what do you believe are the advantages of doing physical activity? As a First Nation individual, what do you believe are the advantages of doing physical activity?
2) What do you believe are the disadvantages of doing physical activity? As a First Nation individual, what do you believe are the advantages of doing physical activity?
3) Is there anything else you associate with doing physical activity?

Normative Beliefs:

1) Is there anybody or any groups that you know who would approve of you doing physical activity?
2) Is there anybody or any groups that you know who would disapprove of you doing physical activity?
3) Is there anybody else or any other groups that come to mind when you think about doing physical activity?
4) How common is it for Westbank First Nation adults to be physically active?

Control Beliefs:

1) What factors or circumstances would allow you to do physical activity? Are there any factors or circumstances related to your culture, ways of living or history that would allow you to do physical activity?
2) What factors or circumstances would make it difficult or impossible for you to do physical activity? Are there any factors or circumstances related to your culture, ways of living or history that would make it difficult or impossible for you to do physical activity?
3) Are there any other issues that come to mind when you think about the difficulty or ease of doing physical activity?