

## ABSTRACT

### SOCIAL SUPPORT AND PHYSICAL ACTIVITY IN OVER THE ROAD TRUCK DRIVERS

By Leigh A. McGough

With sedentary lifestyles at the heart of the obesity epidemic, finding ways to increase physical activity is imperative. Certain populations may encounter unique barriers to increasing physical activity, such as over the road truck drivers (OTRTD). In 2006, a U.S. Department of Transportation survey showed that 90% of truck drivers were overweight and 50% were obese, leading to an increased prevalence in chronic health conditions. Current research indicates a limited number of studies that have focused on decreasing weight and increasing physical activity in OTRTDs. The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in over the road truck drivers.

Pender's Health Promotion Model (HPM) was used as the theoretical framework for this study. The HPM identifies individual characteristics and experiences that affect subsequent health actions, such as exercise and social support. Concepts such as interpersonal influences, situational influences, and support with committing to a plan of action all use social support to increase health outcomes. Over the road truck drivers can benefit from using health-promoting behaviors due to the nature of their work environment.

A quantitative descriptive correlational research design was used for this study. A convenience sample of 42 participants was obtained from two different truck stop locations in the Midwest. A demographic Truck Driver Questionnaire, the Norbeck Social Support Questionnaire (NSSQ), and the International Physical Activity Questionnaire (IPAQ) were administered. Data were analyzed using descriptive and inferential statistics.

Results indicated that there was no significant correlation between total social support and total physical activity scores ( $p=.840$ ). No significant correlations were demonstrated between the NSSQ emotional support subscale and the IPAQ total physical activity score ( $p=.652$ ) or the NSSQ tangible support of the NSSQ and the IPAQ total physical activity score ( $p=.696$ .) Although the results of the study were not statistically significant, there are important implications for practice and research. Providers need to address the unique barriers encountered by OTRTDs and discuss more creative and helpful ways to increase levels of physical activity. Future studies should look at more appropriate tools for this population and take into account the environment in which the study takes place. A qualitative study could provide more insight into the perceptions of exercise and healthy eating, and the specific challenges facing OTRTDs.

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TRUCK DRIVERS

by

Leigh A. McGough

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APPROVAL

V. Sambunathan Advisor

5-3-11 Date Approved

PROVOST  
AND VICE CHANCELLOR

Joe R. Green

5/3/11  
Date Approved

FORMAT APPROVAL

Marcie Nardone

4/21/11  
Date Approved

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## **Chapter I**

### **Introduction**

The health status of citizens in the United States continues to trend downward with each passing year. Sedentary lifestyles and an increase in unhealthy food choices are at the base of obesity along with a multitude of chronic health problems that can result from carrying excess weight. The National Health and Nutrition Examination Survey (NHNES) examined the body mass indexes of 555 adult men and women during 2007-2008 and found that obesity rates were 32.2% among adult men and 35.5% among adult women (Flegal, Carroll, Ogden, & Curtin, 2010). More alarmingly, the results indicated that the combined number of those overweight and obese comprised 72.3% of men and 64.1% of women (Flegal et al., 2010). The U.S. Department of Health and Human Services [Centers for Disease Control and Prevention (CDC), 2008] provided a list of health benefits strongly associated with regular physical activity. These benefits included lower risk of coronary artery disease, stroke, hypertension, hyperlipidemia, type two diabetes, colon cancer, and breast cancer. Benefits also included prevention of weight gain, improved cardiorespiratory and muscular fitness, reduced depression, and reduced abdominal obesity (CDC, 2008).

The CDC (2008) recommends specific guidelines for levels of physical activity in adults. Adults should participate in at least 2 hours and 30 minutes of moderate-intensity aerobic activity every week, and two or more days per week of muscle strengthening activities. Moderate-intensity aerobic activity includes brisk walking, water aerobics, bike riding, pushing a lawn mower, or playing tennis. Muscle strengthening

activities should include all major muscle groups including legs, hips, back, abdomen, chest, shoulders, and arms.

Many Americans are not getting their recommended amounts of physical activity. With sedentary lifestyles and unhealthy eating at the heart of the obesity epidemic, finding ways to increase physical activity and decreasing saturated fat is imperative. Certain populations, such as over the road truck drivers (OTRTD), may encounter unique barriers to following these health promotion strategies. Over the road truck drivers are defined by the U.S. Bureau of Labor and Statistics (2010) as those who drive trucks or vans with a capacity of at least 26,001 pounds gross vehicle weight, and deliver goods over intercity and/or international routes. The health of OTRTDs has captured greater attention in recent years, as healthcare providers and employers have discovered alarming trends in the population (Martin, Church, Bonnell, Ben-Joseph, & Borgstadt, 2009; Olson, Anger, Elliot, Wipfi, & Gray, 2009). High obesity rates indicate that they may have a low level of physical activity. In 2006, a U.S. Department of Transportation survey showed 90% of truck drivers were overweight and 50% were obese, percentages significantly larger than the general population (Dinges & Maislin, 2006). The elevated rates of overweight and obesity in this population has led to an increased prevalence of hypertension, hyperlipidemia, sleep apnea, and diabetes (Martin et al., 2009; Olson et al., 2009).

Over the road truck drivers experience long hours of driving, limited opportunities to exercise, and truck stop food options that encourage diets low in fruits and vegetables and high in saturated fat. The U.S. Department of Transportation Federal Motor Carrier Safety Administration (2010a) states that hours of service rules for property-carrying of OTRTDs is an 11-hour driving limit after 10 consecutive hours off duty. Many drivers



will drive up to this limit due to the productivity pressures of pay-by-the-mile compensation (Olson et al., 2009). When off duty, many will stop at waysides, truck stops, on ramps, or off ramps to sleep in their trucks. These environments often provide limited access and limited safety to physical activity outside of the truck.

Current research indicates a limited number of studies that have focused on decreasing weight and increasing physical activity in this population. One successful study that focused on OTRTDs found that incorporating a weight loss competition, computer-based training, behavioral self-monitoring, and motivational interviewing doubled the number of participants who reported engaging in regular moderate exercise on most days each week (Olson et al., 2009). The extensive study was the first of its kind to indicate that social support in this population may prove to increase levels of physical activity.

Social support has been positively related to increased levels of physical activity in multiple studies, which indicates that its use may be warranted in future groups. There is a moderate amount of evidence that suggests that certain types of social support, such as community based, individual-focused, and employer provided, may in fact increase levels of physical activity (Ayotte, Margrett, & Hicks-Patrick, 2010; Ingram, Ruiz, Mayorga, & Rosales, 2009; Task Force on Community Preventative Services, 2002; Wendel-Vos, Droomers, Kremers, Brug, & van Lenthe, 2007). Most of this research has been conducted in family, community, and employment-based work settings.

The relationship of social support and increased levels of physical activity in OTRTDs has not been extensively reviewed. Populations that possess unique occupational barriers that include long hours of driving, limited opportunities to exercise,

and truck stop food options that encourage diets low in fruits and vegetables and high in saturated fat, may need tailored interventions. In order to create successful health promotion programs for OTRTDs, more research needs to be done to determine if social support has any relationship with physical activity. Olson et. al. (2009) was able to demonstrate a positive relationship between social support and levels of physical activity, but more studies need to be conducted to determine if social support is a key concept to health promotion programs for OTRTDs.

### **Significance for Nursing**

The U.S. Department of Transportation Federal Motor Carrier Safety Administration (2010b) states that OTRTDs must maintain a certain level of physical health in order to hold their commercial drivers license (CDL). Department of Transportation (DOT) physical exams are required at least once every 2 years, and may be required more frequently, as needed, for chronic conditions, such as hypertension and diabetes. Nurse practitioners encompass a large group of providers that provide DOT exams to OTRTDs. Increasing health outcomes of all patients is a priority of providers, but OTRTDs may be of particular interest because of their requirement to maintain a certain level of health in order to keep their CDL. Providers do not want to suspend an OTRTD's license due to inadequate health, but they may be forced to when certain health standards have not been met. In order to increase the health outcomes of these patients and keep them employed, providers and nursing staff should encourage health-promoting activities that can increase patient health outcomes, which is the main goal of nursing. Discovering ways to support and encourage OTRTDs to increase their

health is a responsibility of providers and nurses who are caring for them. Further nursing research in this population can assist in this effort.

### **Problem Statement**

Over the road truck drivers have unique occupational barriers, such as long hours of sitting, lack of access to exercise facilities and equipment, and lack of time that might hinder them in carrying out health promotion activities, such as physical activity. The Task Force on Community and Preventative Services (2002) strongly recommends a variety of social support strategies to increase physical activity among various communities. An increase in social support may be needed to increase the level of physical activity in OTRTDs.

### **Purpose Statement**

The purpose of this study was to determine if there is a relationship between social support and the level of physical activity in over the road truck drivers.

### **Research Questions/Hypotheses**

What is the relationship between social support and the level of physical activity in over the road truck drivers?

It was hypothesized that there would be a positive relationship between social support and the level of physical activity in over the road truck drivers. Those with higher levels of social support would have higher levels of physical activity, and those with lower levels of social support would have lower levels of physical activity.

## Definition of Terms

### Conceptual definitions.

*Social support* is defined by Pender, Murdaugh, and Parsons (2006) in the Health Promotion Model as instrumental and emotional encouragement. Social support can include family, peers, and health care providers.

*Level of physical activity* is defined by the U.S Department of Health and Human Services (CDC, 2008) in terms of baseline activity and health-enhancing physical activity. Baseline activity includes the light-intensity activities of daily life, such as standing, walking, and lifting light objects. Health-enhancing physical activity is that which produces health benefits when added to baseline activity. Examples include brisk walking, jumping rope, dancing, lifting weights, climbing on the playground, and yoga (CDC, 2008).

*Over the road truck drivers* are defined by the Bureau of Labor and Statistics (2010) as those who operate trucks or vans with a capacity of at least 26,001 pounds gross vehicle weight (GVW). The vast majority of OTRTDs deliver goods over intercity routes that may span several states or internationally.

### Operational definitions.

*Social support* is defined as “ the expression of positive affect of one person toward another; the affirmation or endorsement of another person’s behaviors, perceptions, or expressed views; the giving of symbolic or material aid to another” (Norbeck, Lindsey, & Carrieri, 1981, p.265). The Norbeck Social Support Questionnaire was used to measure social support in this study.

*Level of physical activity* was defined as vigorous and moderate activities. Vigorous activities included those that take hard physical effort and cause much heavier

breathing than normal. Moderate activities included those that take moderate physical effort and cause slightly heavier breathing than normal. Level of physical activity was measured through the use of the International Physical Activity Questionnaire and included vigorous and moderate activities within the last 7 days.

*Over the road truck drivers* were defined as those who hold a CDL, spend at least one night away from home in their semi per week due to their occupation, and currently employed in the United States.

### **Assumptions**

Over the road truck drivers are aware of social support and physical activity and their importance.

Over the road truck drivers wish to be in an optimal state of health.

Over the road truck drivers wish to remain employed by maintaining their health for their DOT physicals.

Over the road truck drivers meet the eligibility criteria for the study and will answer the questions honestly.

Over the road truck drivers are more likely to commit to and engage in health-promoting behaviors, such as exercise and physical activity, with assistance and support to enable the behavior from significant others, families, peers, and healthcare providers (important interpersonal sources).

Situational influences in the external environment can increase or decrease participation in or commitment to exercise or physical activity for over the road truck drivers.

## **Chapter Summary**

The purpose of this study was to determine the relationship between social support and the level of physical activity in OTRTDs, since a correlation between levels of physical activity and social support has not been extensively studied. In this chapter, the background of the study, including the significance for nursing, the problem statement, the purpose statement, the research question, conceptual definitions, operational definitions, and assumptions were presented. Sedentary lifestyles and an increase in unhealthy food choices are at the base of obesity and a multitude of chronic health problems that can result from carrying excess weight. The Center for Disease Control and Prevention (2010) recommends specific guidelines for levels of physical activity in adults. High obesity rates in OTRTDs indicate that they may have a low level of physical activity due to long hours of driving and being away from home for days on end. There is a moderate amount of evidence that suggests that certain types of community based, individually based, and employer based social support may in fact increase levels of physical activity (Ayotte et al., 2010; Ingram et al., 2009; Task Force on Community Preventative Services, 2002; Wendel-Vos et al., 2007). Increasing health outcomes of all patients is a priority of providers, but OTRTDs are of particular interest because of their requirement by the DOT to maintain a certain level of health in order to keep their CDL. Discovering ways to support and encourage OTRTDs to increase their health is a responsibility of providers and nurses who care for them.

## **Chapter II**

### **Theoretical Framework and Review of Literature**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in over the road truck drivers. In this chapter, the rationale for the use of Pender et al.'s (2006) Health Promotion Model (HPM), along with a case study are presented. A thorough literature review on health promotion of OTRTDs, and the relationship between social support and level of physical activity in various populations, are also discussed.

#### **Theoretical Framework**

Pender's Health Promotion Model was originally developed in 1982 as a framework for integrating nursing and behavioral science perspectives on factors influencing health behaviors (Pender et al., 2006). The initial model included seven cognitive-perceptual factors and five modifying factors. The seven cognitive-perceptual factors included: importance of health, perceived control of health, definition of health, perceived health status, perceived self-efficacy, perceived benefits, and perceived barriers. The five modifying factors included: demographic and biological characteristics, interpersonal influences, situational influences, and behavioral factors. In 1996, Pender released an updated version of her HPM that included the new variables of activity-related affect, commitment to a plan of action, and immediate competing demands and preferences (see Figure 1) (Pender et al., 2006). Overall, the HPM depicts the multidimensional nature of persons interacting with their interpersonal and physical environments as they strive to maintain health.

Pender, Murdaugh, and Parsons (2002) identifies concepts of the HPM that can guide health-promoting behaviors, including several that reflect the importance of social support for health promotion. Individual characteristics and experiences are important foundations for developing health promotion programs and include prior related behavior and personal factors. Prior related behavior is the baseline from which a person is starting in the health promotion process. Personal factors, such as biological, psychological, and socio-cultural, can influence individual characteristics and experiences.

The individual characteristics and experiences are then combined with behavior-specific cognitions and affect. Some of these concepts are based on perceived benefits of action, perceived barriers to action, perceived self-efficacy, and activity-related affect. The rest are based on the influence of social support and include interpersonal influences and situational influences. Social support involves families, peers, and healthcare providers, who are important sources of interpersonal influence that can affect the commitment level of engaging in health-promoting behavior. The processes that can affect an individual's predisposition to engage in health-promoting behaviors are norms, social support, and modeling. Norms are expectations of significant others. Social support is instrumental and emotional encouragement. Modeling is vicarious learning through observing behavior of others.

The second concept in Pender's model that deals directly with social support is how situational influences in the external environment can affect the commitment level to participate in health-promoting behaviors such as physical activity. Situational influences can directly or indirectly influence health behavior through the exposure of the triggers within an environment and can influence behavior in a positive or a negative



way. The overall commitment to a plan of action will be determined by all of the above factors: perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences. Persons are more likely to commit to and engage in health-promoting behaviors when those close to them model the behavior, provide expectations for the behavior, and demonstrate assistance and support to enable the behavior. The last component of Pender's model that can affect subsequent health actions is immediate competing demands and preferences. Persons will be less likely to commit to a plan of action for health-promoting behavior when competing demands over which persons have little control take precedence.

Physical activity is a primary health-promoting behavior that can be applied to the HPM. The level of physical activity in OTRTDs can be directly related to the HPM concepts. An OTRTD will have a prior level of physical activity to serve as a baseline for health promotion that will be influenced by his biological, psychological, and socio-cultural factors. The socio-cultural factor may be most important due to the lifestyle of living on the road. Each OTRTD will possess his own perceived benefits and barriers to physical activity, with barriers most likely being greater. Perceived self-efficacy may be an issue due to the nature of the environment and the belief that time and space are not readily available for physical activity. Interpersonal and situational influences could support or diminish an increase in physical activity and may be a key component in promoting health in OTRTDs. All of these factors will influence the commitment to a plan of action. Lastly, the immediate competing demands and preferences of being on the road may be another difficult barrier for OTRTDs to overcome. The following case presentation illustrates how social support in the form of family, peers, and healthcare

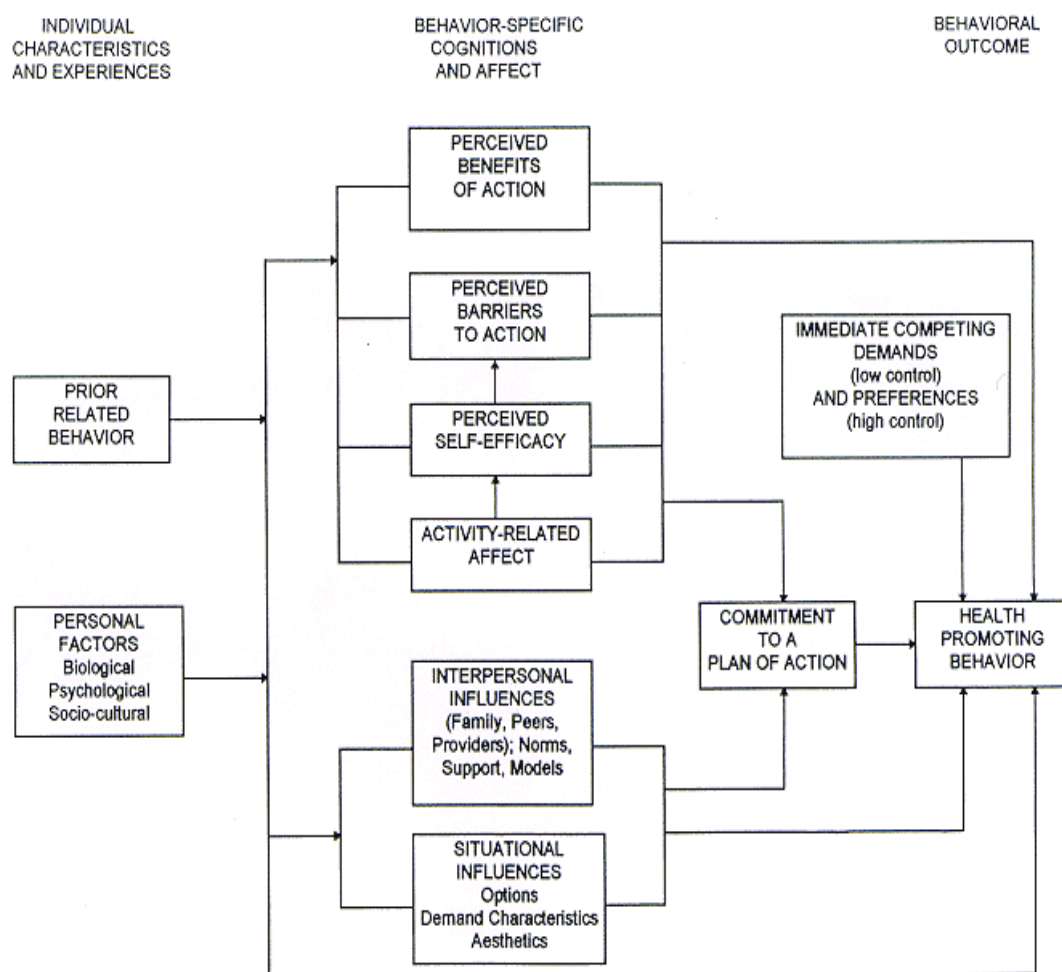
providers can have a positive effect on the level of physical activity in an OTRTD through the use of the Health Promotion Model.

### **Case Presentation**

G is a 54-year-old male who has been an OTRTD for 30 years. His job requires him to be on the road for 2 weeks at a time, and G spends his evenings at truck stops and sleeps in the cab of his semi. When G started his career as an OTRTD at age 24, he was able to load and unload his own cargo at loading docks. Equipment and policy changes resulted in G not needing to load and unload his cargo, and his level of physical activity decreased greatly. G found it hard to eat healthy on the road and would often eat fast food and drink soda. He hardly ever got any type of exercise and did not think much about his health. When G was 35, he developed hypertension and hyperlipidemia. He was 30 pounds overweight and was told that he was pre-diabetic. His healthcare provider discussed dietary changes that he would need to make and ways to increase his physical activity in his very unique occupational situation. G was concerned that his life on the road would not be conducive to health-promoting changes and worried about his ability to follow through. He knew that the benefits outweighed the barriers and that he needed to make a change. G's wife was concerned with his health, and they decided to create goals to increase their physical activity and decrease their intake of unhealthy foods. G started walking completely around his truck every time he got out of it and started parking further away from truck stops in order to increase his steps. G's wife would encourage him to eat better and exercise on their daily calls and would hold him accountable if he did not follow through with his goals. G purchased dumbbells and started to do some weight training in his truck during his off time. G witnessed other

drivers making laps around their trucks and felt more motivated to continue his physical activity. He made a commitment to increase his health and did his best to hold true to it. There were several times when keeping this commitment was difficult due to time constraints on load deliveries, sleeping irregular hours, and having to pick from poor food choices. Despite these obstacles, G received continued support from his wife and his provider. Over several months, G brought down his weight by 20 lbs., was no longer pre-diabetic, and had decreased his blood pressure and his cholesterol.

The following case presentation demonstrates how G was able to increase his level of physical activity through the social support of his wife and healthcare provider. His baseline health behavior was influenced by his old eating and exercise habits and was maintained due to the culture of his work. G was reluctant to make changes in health habits due to the potential for failure with being on the road. G was more likely to commit to and engage in health-promoting behaviors when his wife modeled the behavior, provided expectations for the behavior, and demonstrated assistance and support to enable the behavior. The interpersonal influences of G's wife and healthcare provider affected the commitment level of engaging in health-promoting behavior through social support. Situational influences in the external environment also affected G's commitment level to physical activity when he witnessed other truck drivers increasing their physical activity. He altered his environment when he purchased dumbbells and would be triggered to use them before going to bed at night. He still faced immediate competing demands, but held true to his commitment through the support of his wife and provider. Pender's Health Promotion Model clearly demonstrates how social support can be used to increase physical activity and provides a rationale for HPM use in this study (Pender et al., 2006).



Revised Health Promotion Model

Figure 1. Pender's Health Promotion Model (Pender et al., 2006).

## **Review of Literature**

A literature review of studies related to health promotion programs in OTRTDs and the relationship between social support and physical activity will be discussed in this section. There were limited studies on health promotion programs in OTRTDs. Social support and physical activity appear to have a positive relationship in multiple group settings. These studies will be reviewed in detail.

### **Health promotion of OTRTDs.**

Three main studies were found on the health of OTRTDs. A large retrospective cohort study was conducted to examine the mortality in the unionized U.S. trucking industry. Cause-specific mortality was assessed by using the National Death Index through 2000 on 54,319 employees employed in 1985 (Laden, Hart, Smith, Davis, & Garshick, 2007). Research indicated that there was an elevated number of deaths related to lung cancer, ischemic heart disease, and transport in the trucking population when compared to the general U.S. population. Most notably, there was a 41% higher level of ischemic heart disease related deaths. Smoking and exhaust inhalation were each discussed as possible reasons for these increased deaths. The authors concluded that smoking was unlikely to explain the results and that further research would need to be done to assess the contribution of lifestyle and personal habits that increase health risks to drivers (Laden et al., 2007).

Buxton et al. (2009) and Sorensen, Quintiliani, Pereira, Yang, and Stoddard (2009) both published findings from “The Gear Up for Health” study. The study was a quasi-experimental, pretest/posttest design used to test an intervention to promote tobacco use cessation and weight management among unionized truck drivers and dockworkers. Five hundred and forty two participants from eight randomly selected

trucking terminals in the Eastern region of the U.S. participated in the baseline survey. The baseline survey measured tobacco use, intentions to quit, social context of work, dietary outcome measures, job strain, sleep, and personal characteristics. The baseline survey found that 40% of the participants used tobacco and that intention to quit was associated with amount smoked and coworker norms encouraging cessation. Higher tobacco use was associated with higher intake of sugary drinks and salty snacks and lower intake of fruits and vegetables. Decreased tobacco rates, lower job strain, increased supervisor support, and adequate sleep were all associated with healthier eating habits. Sleep deprivation and disruptions were linked to weight gain, diabetes, hypertension, cardiovascular disease, and early mortality (Buxton et al, 2009; Sorenson et al., 2009). The researchers indicated that the association between tobacco usage, job strain, social support, diet, and sleep need to be considered when developing interventions to increase health promotion in this population.

Olson et al. (2009) completed a single group pre-posttest design to evaluate intervention effectiveness for reducing body weight and increasing healthful and safe behaviors in 29 OTRTDs from four trucking carriers based in the Pacific Northwest region of the U.S. The authors used a weight loss competition, computer-based training, behavioral self-monitoring, and motivational interviewing. Participants were grouped into teams based on their employer and competed against each other for a 6-month period. Each participant was given a lap top and computer-based training that covered the program overview, exercise, diet, and safety. Behavioral self-monitoring techniques were chosen weekly by each driver, such as monitoring steps per day or exercise minutes per day. Each driver was offered up to four motivational interview sessions with a health coach over the phone.

Results showed a mean weight loss average of about one unit of body mass index ( $SD=11.5$ ,  $p=0.005$ ). Ninety percent of participants lost weight, and survey data suggested this was largely due to reduced consumption of high-saturated fat/high sugar foods. The Physical Activity Recall interview was atypical for a large number of participants by having more than normal or less than normal physical activity in the last 7 days. This may indicate a varying degree of physical labor required on the job for each OTRTD. Overall, the intervention doubled the number of participants who reported engaging in regular moderate exercise on most days of the week. Clinical and fitness data remained relatively stable pre- and post-intervention, with a near significant reduction in waist-to-hip ratio, waist circumference, and 6-minute walking test scores. During the exit interview, drivers expressed a desire for more frequent communication with their fellow teammates during the competition, which indicates the importance of social support for maintaining physical activity. Limitations of the study included a high attrition rate (25%) due to job related changes, family demands, and unknown reasons (Olson et al., 2009).

Though somewhat successful, the small sample size of this study does not provide enough evidence to convince employers that the financial investment of this type of health promotion program would prove fruitful. The key to the success of this program appears to be the high level of social support. Social support has been associated with higher levels of physical activity in a variety of populations. More research needs to be done on this population in order to establish more successful health promotion programs that could possibly be implemented by employers in the future.

**Relationship between social support and physical activity.**

Three major meta-analyses studies examined the relationship between various types of social support and levels of physical activity in adults. These three meta-analyses, along with findings from single research studies, were examined to determine what the current literature states about the relationship between these two variables. Several types of social support were found to have a positive relationship with levels of physical activity, including community wide campaigns, social support interventions in community settings, individual-adapted health behavior change programs, and environmental and policy approaches to increasing physical activity. Other types of social support did not reveal a direct relationship with levels of physical activity, including mass media campaigns, classroom-based health information, and family-based social support (Task Force on Community and Preventative Services, 2002).

The Task Force on Community and Preventative Services (2002) released an extensive meta-analysis of studies with the support of the U.S. Department of Health and Human Services and the Center for Disease Control and Prevention that focused on ways to increase physical activity in communities. The task force evaluated the effectiveness of 11 types of interventions that were grouped into three categories: informational approaches to increasing physical activity, behavioral and social approaches, and environmental and policy approaches. Informational approaches included point-of-decision prompts, community-wide campaigns, mass media campaigns, and classroom-based health education. The task force found that point-of-decision prompts, such as motivational signs placed by elevators to use nearby stairs, have been shown to be effective and are recommended. Community-wide campaigns, such as support and self-help groups, physical activity counseling, risk factor screening,



education at worksites and schools, the creation of walking trails, and community health fairs, are associated with increased levels of physical activity and are strongly encouraged. Mass media campaigns and classroom-based health education revealed insufficient evidence for current usefulness.

The notable behavioral and social approaches to increasing physical activity focused on family-based social support, social support interventions in community settings, and individually-adapted health behavior change programs. Family-based social support, including such activities as educational sessions on health, goal-setting and problem solving, and family behavioral management, revealed insufficient evidence for effectiveness. Social support interventions in community settings included buddy systems, making contracts with others to complete specified levels of physical activity and setting up walking or other groups. The task force found evidence that led them to strongly recommend social support interventions in community settings. Individual-adapted health behavior change programs were examined and included incorporating the five skills of: setting goals, building social support, behavioral reinforcement, structured problem-solving, and prevention of relapse. These programs were also strongly recommended.

Lastly, the task force examined environmental and policy approaches to increasing physical activity. The creation of or increased access to places for physical activity combined with informational outreach activities is strongly recommended. Several work site programs were reviewed. The task force found an increase in physical activity and improved physical fitness among adults involved in these programs. An increase in physical activity due to work site programs has led the task force to encourage work environments that foster physical activity. Overall, the research study

showed several types of social support that are strongly recommended for increasing physical activity, including community wide campaigns, social support interventions in community settings, individual-adapted health behavior change programs, and environmental and policy approaches to increasing physical activity. Social support in the forms of mass media campaigns, classroom-based health information, and family-based social support did not indicate a strong relationship with increasing levels of physical activity (Task Force on Community and Preventative Services, 2002).

Another large meta-analysis examined articles retrieved from Medline, PsycInfo, Ebase, and Social science research. Forty-seven publications were identified and reviewed to discover environmental factors that have been shown to be potential determinants of various types and intensities of physical activity among men and women. The meta-analysis used the ANGELO framework to determine environmental categories of physical, socio-cultural, economic, and physical activity. Studies from 1989 through 2004 were identified and analyzed. The analysis revealed two convincing environmental determinants of physical activity: (a) social support of having a companion for physical activity and connectivity of trails and (b) availability of physical activity equipment. Aesthetics, accessibility and convenience of facilities, safety, weather, pollution, geographical features, neighborhood/household income, and costs for physical activity were not found to have a significant effect on physical activity levels. The findings were limited due to null associations in 75.5% of the records reviewed, and the researchers cautioned that although research on environmental attributes associated with physical activity among adult men and women is promising, more research is needed (Wendel-Vos, et al., 2007).

The last meta-analysis was supported by the Center for Disease Control and Prevention (McNeill, Kreuter, & Subramanian, 2006). Concepts and evidence of the relationship between the social environment and physical activity were reviewed in the studies, and these were divided into the most commonly studied social factors of interpersonal relationships, social inequalities, and neighborhood and community characteristics. Interpersonal relationships are based on research that indicates social support, and social networks can increase levels of physical activity through the establishment of positive social norms and development of attachment and connectedness to one another. Social inequality indicates that those who hold lower socioeconomic positions are more likely to engage in job-related physical activity in comparison to those with higher socioeconomic positions. On the other hand, unequal distribution of physical activity resources in higher income communities is more likely to influence the opportunities for physical activity. Lastly, neighborhood and community characteristics of social cohesion and social capital have indicated better health outcomes (McNeill et al., 2006). The author concluded that social support and networks, along with social cohesion and social capital, may indicate areas for future successful studies in increasing levels of physical activity.

Ayotte et al. (2010) examined the roles of self-efficacy, barriers, outcomes expectations, self-regulatory behaviors, and social support in regards to physical activity in middle-aged and young-old adults. One hundred and sixteen married community-dwelling middle-aged and young-old couples participated in the study by filling out material packets that were mailed to their homes. Several instruments were used to measure the various social cognitive constructs, including: a barrier self-efficacy and task-related self-efficacy scale, a 15-item Positive Social Influence Scale, the Benefits of

Physical Activity Scale, the Exercise Planning and Scheduling Scale, the Exercise Goal-Setting Scale, the Perceived Barriers to Exercise Scale, and the Paffenbarger Physical Activity Questionnaire. Instruments were used to measure the various social cognitive constructs mentioned above. Social support was found to be directly related to increased self-efficacy and increases in self-regulatory behavior. The relationship between social support and physical activity was almost entirely indirect. This was because the other social cognitive constructs of self-efficacy and self-regulatory behavior had a direct relationship with physical activity. This suggests that interventions that focus on increased social support for physical activity may be indirectly successful through other social cognitive constructs.

Ingram et al. (2009) used focus groups within two Mexican-American communities in Tucson, Arizona to determine the effectiveness of a community-based provider organized walking group. A group motivator was assigned and held responsible for contacting group members to remind them to walk three times per week and to check on participants who had not shown up to walk. Self-efficacy, social support, and collective efficacy were discovered through the use of grounded theory. Of the 43 eligible participants, 20 discussed their thoughts in focus groups. Self-efficacy increased as stamina increased. Setting goals and viewing other people walking motivated participants to believe in themselves. Social support was important in helping motivate participants to continue walking by making the experience more enjoyable and by having people around that could show encouragement. Collective efficacy emerged as participants described development of a group identity through walking. This appeared to be the strongest motivator for participants. The author cautions that though these results are very insightful, they must be used in the context of a cultural

community that values group identity in everyday life. These findings may not fully apply to other, more individualized cultures.

In summary, studies specifically related to increasing overall health and physical activity in OTRTDs are limited. The studies reviewed discussed the increased number of deaths in OTRTDs compared to the rest of the population in the United States, the relationship between tobacco usage and poor dietary intake with sleep deprivation and coworker norms, and the use of a socially-based weight loss competition to increase weight loss in OTRTDs. The Task Force on Community Preventative Services (2002) determined that different types of social support, including community wide campaigns, social support interventions in community settings, individual-adapted health behavior change programs, and environmental and policy approaches to increasing physical activity are highly recommended. Other studies found that variables, such as aesthetics, community funds, and accountability, were all directly related to increases in physical activity.

## **Chapter Summary**

In this chapter the theoretical framework and literature review were presented. Pender et al.'s (2006) Health Promotion Model will be used as the framework for this study. Some notable theoretical propositions of the model include the utilization of various types of social support. Only one research study reviewed about OTRTDs has shown any increase in levels of physical activity that could have been related to social support. More research needs to be done on this population in order to establish more successful health promotion programs that could possibly be implemented by employers in the future. The literature suggests that various types of social support seem to be

associated with increased levels of physical activity; however, studies demonstrate contradicting results. Although community support seems to be strongly associated with increased physical activity, family support has shown inconsistent results. Work related programs have appeared to be successful in the past and may need to be examined further. With a unique population like OTRTDs, incorporating social support into interventions to increase levels of physical activity may prove successful. More research needs to be done on this population in order to determine if social support is associated with increased levels of physical activity and in turn may help guide future interventions for a population in desperate need of intervention and support.

## **Chapter III**

### **Methodology**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. In this chapter the design, population, sampling and setting, data collection instruments, data collection and data analysis procedures, and anticipated limitations are discussed.

#### **Design**

A quantitative descriptive correlational research design was used for this study. Descriptive correlational research is used to describe the relationships among variables rather than to determine cause-and-effect relationships. This was an appropriate design for this study, since this researcher sought to determine the relationship between social support and the level of physical activity in OTRTDs.

The independent variable in this study was social support and the dependent variable was the level of physical activity. Extraneous variables identified included number of nights away from home per week and level of physical activity required for occupational reasons, as these variables may cause a decrease or increase in physical activity.

#### **Population, Sampling, and Setting**

The target population was OTRTDs in the Midwest. Inclusion criteria were: OTRTDs who held a CDL, spent at least one night away from home in their semi per week due to their occupation, and were currently employed in the Midwest. Exclusion

criteria included those who could not speak, read, or write English. Since it was estimated that the sample of OTRTDs are mobile and difficult to access, convenience sampling was used. The goal was to solicit 50 OTRTDs who met the eligibility criteria would participate in the study. Two to three larger truck stops located off of interstates in the Midwest were used as sites for data collection in order to ensure a more diverse sample.

### **Data Collection Instruments**

A modified demographic Truck Driver Questionnaire, the Norbeck Social Support Questionnaire (NSSQ) and the International Physical Activity Questionnaire (IPAQ) were used to collect data. The NSSQ was developed by Norbeck in 1980, with the most recent revision completed in 1995 (Gigliotti, 2002). The NSSQ was designed to measure three functional types of social support: (a) affect, (b) affirmation, and (c) aid. Affect refers to emotional support. Affirmation refers to the amount of support a person receives by being fully listened too. Aid refers to the perception that a person would help in a time of need. There are a total of nine items on the NSSQ. Questions one and two measure affect, questions three and four measure affirmation and questions five and six measure aid. Questions seven through nine examine length, frequency, and loss of relationships. For this study, the English version of the questionnaire was used

The NSSQ was an appropriate instrument for this study due to the multiple dimensions of social support that can be measured and the high level of reliability and validity of the instrument. The internal consistency reliability has been calculated using Pearson correlations among the items (Norbeck et al., 1981). The researchers found that each of the two items from each subscale was highly correlated: affect, .9;



affirmation, .96; and aid, .89. The three network properties of (a) number in network, (b) duration of relationships, and (c) frequency of contact were found to have correlations that ranged from .88 to .96. The test-retest reliability 1 week later showed affect, .89; affirmation, .88; and aid .86. A correlation of .92 was found for the three network properties. Construct validity did not produce significant findings with a sample size of 33. Profile of Mood States (POMS) scores were used as an outcome measure for examining the relationships between the model of stress, social support, and health outcomes. The six mood state variables were found to not be significantly correlated with the NSSQ functional or network subscales or total scores.

Norbeck, Lindsey, and Carrieri (1983) developed the NSSQ further through three studies. The first study examined construct validity by comparing the NSSQ with the Fundamental Interpersonal Relations Orientation (FIRO-B) instrument in 136 employed adults. The FIRO-B instrument looks at the three constructs of (a) need for inclusion, (b) need for affection, and (c) need for control. The constructs of (a) need for inclusion and (b) need for affection found significant small to moderate correlations with NSSQ subscales. Need for inclusion ranged from .17 to .26 and need for affection ranged from .21 to .27. There was no significant correlation between need for control and the NSSQ subscales (.00 to -.09).

The second study looked at the sensitivity and stability of the NSSQ by following up with masters students who had completed the initial study in 1981. Each subscale in the NSSQ was highly correlated with the same subscale 7 months later (range of .58 to .78), which indicated a high degree of stability. The last study examined concurrent and predictive validity by comparing the NSSQ with the Personal Resource Questionnaire (PRQ), Sarason's Life Experiences Survey, and the Profile of Mood States

questionnaire. There was modest concurrent validity found between the PRQ and the NSSQ (.35 to .41).

The IPAQ has been highly used in multiple research studies in different age groups, ranging between 15 years to 69 years of age, and measures physical activity in terms of (a) leisure time physical activity, (b) domestic and gardening (yard) activities, (c) work-related physical activity, and (d) transport-related physical activity. This form is structured to provide separate domain-specific scores for walking, moderate-intensity and vigorous-intensity activity, transportation, domestic chores and gardening (yard), and leisure-time domains in term of duration of minutes and frequency of days (Sjostrom et al., 2005). The tool has been validated in 12 countries. A study on the reliability and validity of the IPAQ was conducted on 108 men aged 20 years to 39 years in Norway. The IPAQ was administered twice to a random sample of 108 men, aged 20 years to 39 years from two communities in Norway for the Nord-Trondelag Health Study. The reliability was good ( $r=0.41$ ,  $p \leq 0.01$ ) for vigorous activities and moderate ( $r=0.26$ ,  $p \leq 0.05$ ) for sitting hours per week. Intraclass correlations ranged from 0.30 for moderate activity hours to 0.8 for sitting hours. The IPAQ was found to be a moderately good measure of vigorous activity in terms of validity. Walking was fairly correlated with metabolic equivalents. Overall, questions about moderate activity had fair reproducibility and correlated poorly with many of the comparison measures (Kurtze, Rangul, & Hustvedt, 2008). There are two forms of the IPAQ: the long and short forms. The long form was used for the pilot study. Based on the responses by participants from the pilot study, the short form was used for the full study.

The Truck Driver Questionnaire contains demographic questions regarding gender, age, state of residence, marital status, number of children, education level,

years driving, current employment status, type of driving, average number of nights away from home per week, hours of sleep per night, and location of parking their truck at night. Additional questions included current level of physical activity, feelings of needing to exercise if already physically active at work, current knowledge of physical activity that can be done on the road, and interest in increasing the level of physical activity while on the road. The Truck Driver Questionnaire was modified from the Trucker Questionnaire created by Van Rooy (1998). Questions in regards to age, sex, home state, marital status, numbers of years driving truck, number of children, grades completed, type of driving, employment status, hours of sleep per night, and place that truck is parked at night were used. Additional questions on physical activity were created and added. Permission was granted to use and modify questions from this questionnaire.

### **Data Collection Procedures**

Data were collected after approval from the University of Wisconsin-Oshkosh Institutional Review Board (IRB) Protection of Human Participants Committee. A verbal explanation and written summary of the study was given to participants prior to starting the study. A table was set up inside the truck stop facility with a sign that indicated that a nurse was conducting a study on over the road truck drivers. Over the road truck drivers were approached and some also volunteered to fill out surveys. The data collection packet was placed on clip boards, and pens were provided. Participants were told that the survey would take approximately 20 minutes to complete. Participants were instructed to return their completed surveys to the researcher. The surveys were then placed in a collection box.

### **Pilot Study**

A pilot study was conducted at one truck stop in the Midwest at two separate times with the goal of securing 10 participants. The IPAQ long form was administered, along with the demographic and NSSQ surveys for the first pilot study. Three participants completed the surveys. Ten potential participants declined the invitation to participate due to the length of the surveys, and the three who did participate stated that the length of the surveys (especially the IPAQ) was overwhelming. Due to this response, the IPAQ short form was substituted for the long form for the second pilot study at the same facility. Ten surveys were completed. Seven participants stated that the surveys were still very long, but manageable. Five participants declined to participate due to time constraints. The average length of time for a participant to fill out each survey was 15 minutes. Seven participants needed an explanation on how to fill out the surveys, particularly the NSSQ. A total of ten participants completed the surveys from the two pilot studies.

### **Data Analysis Procedures**

The NSSQ and IPAQ questionnaires were scored according to the scoring instructions accompanying the questionnaires. Descriptive and inferential statistics were used to analyze data. Descriptive statistics were used to calculate the mean and median of demographic information and scores on each questionnaire. Ranges and standard deviations were also calculated. Bivariate descriptive statistics were extracted through the use of contingency tables and the Pearson's  $r$  correlation index. Contingency tables are typically used with nominal and ordinal data and to show the frequency distribution of two variables when they are cross tabulated. The Pearson's  $r$

was used to determine the magnitude and direction of the relationship between social support and the level of physical activity.

Chi-square test was used to test the hypotheses about the proportion of cases that fell into different categories based on contingency tables. A significance level of .05 was set prior to conducting the study. A two-tailed test was used to determine if the null hypothesis was rejected.

### **Limitations**

Generalizations of the results are limited due to small sample size and one geographic location.

Time constraints, the site of data collection, and mobility of the population might have limited the sample size.

The probability of missing items or giving incorrect responses on the surveys or not completing an entire survey due to time constraints or complexity of the surveys.

### **Chapter Summary**

A quantitative descriptive correlational research design was used for this study. Convenience sampling was used to select participants at two different truck stop locations in the Midwest. A demographic Truck Driver Questionnaire, the Norbeck Social Support Questionnaire (NSSQ) and the International Physical Activity Questionnaire (IPAQ) were used to collect data. Descriptive and inferential statistics were used to analyze data.

## **Chapter IV**

### **Results**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. In this chapter, the findings and discussion are presented.

#### **Description of the Sample**

A total of 54 surveys were distributed to participants throughout the entire study. Two different truck stops were chosen for data collection. Each site was visited on two separate occasions. A pilot study was conducted at two separate times with a total of 13 surveys distributed between both of them. Out of 13 potential participants for the first pilot study, only three completed the surveys due to the length of the long version of the IPAQ. Hence, the short form was used for the second pilot study. Ten surveys were administered during the second pilot study, but only seven were usable. Three participants stated that they spent zero nights away from home and did not meet the eligibility criteria for the study. The full study was conducted at a different truck stop on two separate occasions. Of the 41 surveys that were administered during the full study, 35 were usable and six were not usable. These six surveys were excluded because five did not fill out the NSSQ questionnaire and one had listed zero nights away from home and did not fill out the NSSQ questionnaire. In summary, a total of 54 surveys were distributed between the two pilot studies (N=13) and the full study (N=41), resulting in seven usable surveys from the two pilot studies and 35 usable surveys from the full study. This resulted in 42 usable surveys for analysis.

## Demographic Data

Table I below indicates that of the 42 participants who completed the surveys, 73.8% were male and 26.2% were female. Participants were from many states, with the majority (31%) being from Wisconsin. Table 2 indicates that almost 50% of the participants were married and just over 40% had one to two children. Educational background varied, with 35.7% completing high school. The number of years of driving also varied. The majority (33.3%) drove 11 years or more. Most OTRTDs worked for a company (66.7%). Most drivers also drove alone (64.3%), with the rest driving as husband and wife team, a friend team, or a combination of team and single driving. Table 3 indicates that 85.8% of the participants spent at least four nights a week away from home. Over 80% slept at least 7 hours per night, and over 80% stated that they parked their trucks at truck stops during the night. When asked how many days per week they felt they should exercise, 50% said every day. When asked if they felt they needed to exercise if they were already physically active at work, 85.7% said yes. Participants were asked if they had ever been taught ways to increase their physical activity while on the road, and 40.5% said yes. They listed coworkers, employers, spouses, therapists, healthcare workers, and online research as sources of physical activity education. Employers were the highest listed (21.3%), followed by coworkers (4.8%). When asked if they were interested in learning ways to increase their physical activity on the road, 71.4% said that they were interested.

Table 1

*Truck Driver Questionnaire Demographics (1)*

Demographic	N=42	Percent
Gender		
Male	31	73.8
Female	11	26.2
State of Residence		
AR	1	2.4
CA	2	4.8
FL	4	9.5
GA	2	4.8
IA	1	2.4
ID	2	4.8
IL	2	4.8
IN	1	2.4
KY	1	2.4
MI	4	9.5
NC	2	4.8
ND	1	2.4
NY	1	2.4
OH	1	2.4
OK	1	2.4
TN	1	2.4
UT	1	2.4
WA	1	2.4
WI	13	31.0



Table 2

*Truck Driver Questionnaire Demographics (2)*

Demographic	N=42	Percent
<b>Marital Status</b>		
Single	13	31.0
Married	20	47.6
Divorced	8	19.0
Widowed	1	2.4
<b>Number of Children</b>		
Zero	12	28.6
1 – 2	17	40.5
3 – 4	11	26.2
5 or more	2	4.8
<b>Grades completed</b>		
K – 8	2	4.8
9 – 12	15	35.7
GED	6	14.3
Technical college	8	19.0
University	6	14.3
Graduate	5	11.9
<b>Number of years driving</b>		
1 – 3	7	16.7
4 – 6	10	23.8
7 – 10	11	26.2
11 or more	14	33.3
<b>Employment status</b>		
Independent	11	26.2
Private Owner	3	7.1
Company	28	66.7
<b>Type of driving</b>		
Single/alone	27	64.3
Husband/wife team	4	9.5
Team driving	4	9.5
Both team and single	7	16.7

Table 3

*Truck Driver Questionnaire Demographics (3)*

Demographic	N=42	Percent
Average number of nights away from home		
1 – 3	6	14.3
4 – 6	13	31.0
More than a week	23	54.8
Hours sleep per night		
5	2	4.8
6	6	14.3
7	8	19.0
8	17	40.5
9	3	7.1
10	5	11.9
12	1	2.4
Where do you park your truck at night?		
Truck stop	34	81.0
Wayside/rest area	5	11.9
On ramp	1	2.4
Other	2	4.8
How many days per week do you feel you should exercise?		
None	3	7.1
1 – 3	10	23.8
4 – 5	8	19.0
Every day	21	50.0
Do you feel you need to exercise if you are physically active at work?		
Yes	36	85.7
No	6	14.3
Are you interested in increasing your physical activity while on the road?		
Yes	30	71.4
No	12	28.6
Have you ever been taught ways to increase your physical activity?		
Yes	18	42.9
No	24	57.1

Table 4

*Truck Driver Questionnaire Demographics (4)*

Demographic	N=42	Percent
Ways to increase physical activity was taught by whom?		
Coworker	2	4.8
Employer	9	21.3
Healthcare worker	1	2.4
Online research	1	2.4
Therapist	1	2.4
Spouse	1	2.4
Both coworker and therapist	1	2.4
Both employer and spouse	1	2.4
Answer no and no one listed	25	59.5

The IPAQ was scored based on scoring instructions that accompanied the tool. The IPAQ is scored based on Metabolic Equivalents (MET). Physical activity was divided into three levels based on scoring instructions: low, moderate, and high. Metabolic Equivalents estimates of the IPAQ were calculated for the three categories: walking = 3.3 METs, moderate physical activity = 4.0 METs and vigorous physical activity = 8.0 METs. The IPAQ showed that 28.6% of participants had a low level of physical activity, 31% had a moderate level, and 40.5% had a high level of physical activity (see Table 5). In terms of vigorous physical activity, the IPAQ showed that 45.2% of participants had spent zero days of physical activity in the last 7 days. For moderate physical activity, 38% of participants listed zero days of moderate activity in the last 7 days. The amount of time spent walking showed that 19% had listed zero

days in the last 7 days. Hours of time spent sitting varied largely, with 14.3% stating 10 hours per day and 11.9% stating 14 hours per day. Answers ranged from 1 hour per day to 50 hours per day. These responses were adjusted by dividing the total number of hours by 7 and will be explained below.

Of the 42 participants, 13 answered the last item on the IPAQ in relation to hours sitting per week day, with a number greater than 24. For those surveys that had a number greater than 24 listed, the number was divided by seven and the result was then substituted for the number of hours sitting per week day. The number 7 was used, because the IPAQ is based on the past 7 days of activity. Cronbach's alpha was .610.

Table 5

*Level of Physical Activity for International Physical Activity Questionnaire*

Level of Activity	N=42	Percent
Low	12	28.6
Medium	13	31.0
High	17	40.5

Note: Levels were calculated based on scoring instructions from the International Physical Activity Questionnaire. Categories of low, moderate, or high were assigned based on overall minutes spent in the last seven days participating in vigorous activity, moderate activity, walking, or sitting.

Table 6

*Number of Days Spent in Each Level of Physical Activity (IPAQ)*

Days	<u>Walking</u>		<u>Moderate</u>		<u>Vigorous</u>	
	N=42	Percent	N=42	Percent	N=42	Percent
0	8	19.0	16	38.1	19	45.2
1	2	4.8	3	7.1	4	9.5
2	2	4.8	7	16.7	8	19.0
3	7	16.7	6	14.3	2	4.8
4	2	4.8	3	7.1	3	7.1
5	10	23.8	5	11.9	3	7.1
6	3	7.1	0	0.0	0	0.0
7	8	19.0	2	4.8	3	7.1

Table 7

*Number of Hours Spent Sitting per Day in the Last 7 Days*

Hours	N=42	Percent
1 – 8	15	35.71
9 – 16	21	50.0
17 – 22	6	14.29

Results from the NSSQ: For the NSSQ, the average number of people listed in the social network was 6.43, with a range of 1 to 24, and a standard deviation of 4.197. Thirty eight percent reported suffering a recent loss of someone they had considered part of their social network, and 64.3% stated that the loss did not affect them in any way. The NSSQ scoring was based on the scoring instructions that accompanied the tool. Social support was broken down into subscales of emotional support and tangible support. If a person listed the maximum number of people on the questionnaire (24) and

gave them the highest rating for emotional and tangible support (4) for each question, then the highest possible emotional support score was 384 and the highest possible tangible support score was 192. Emotional support and tangible support were combined to show total functional support. The highest total functional score was 576. The emotional support subscale mean was 84.21, with a range of 11 to 367 and a standard deviation of 60.17. Tangible support showed a mean of 39.80, with a range of 2 to 134 and a standard deviation of 25.78. The total functional support score was the overall score from both emotional and tangible support. The mean was 124.02, with a range of 14 to 501 and a standard deviation of 84.64. Cronbach's alpha was calculated at .923. The results show wide ranges and large standard deviations. This is due to the differences in the number listed for the social network for each person. The mean for this was 6.43, but the range was 1 to 24. Nine participants (21.4%) listed five people in their social network. Only one (2.4%) listed 24 people in his/her social network. If a person only listed one person in their social network, their total scores would be significantly lower than if someone listed 24 people in their network. This might have led to a very large range for the categories of emotional support, tangible support, and total functional support.

Table 8

*Norbeck Social Support Questionnaire Scores for Number Listed in Network, Emotional Support, Aid, and Total Functional Score (N=42)*

	Minimum	Maximum	Mean	SD
Number listed in social network	1	24	6.430	4.197
Emotional support scale	11	367	84.214	60.177
Aid (tangible) subscale	2	134	39.810	25.785
Total functional score	14	501	124.024	84.646

Note:  $N=42$ . Scoring was based on instructions accompanying the Norbeck Social Support Questionnaire and scores were based on emotional support, aid, and total functional score. Number listed in network was the number of people each participant listed on the NSSQ.

Table 9

*Recent Loss and Amount of Support Lost (NSSQ)*

	$N=42$	Percent
Recent loss		
Yes	16	38.1
No	26	61.9
Amount of support lost		
None	27	64.3
A little	2	4.8
Moderate	6	14.3
Quite a bit	5	11.9
A great deal	2	4.8

Pearson correlation coefficient was calculated by comparing the total physical activity score to the total functional score, the emotional support subscale score and the tangible support subscale. Tables 10, 11, and 12 show that there were no significant correlations ( $p=.840$ ) between the NSSQ total functional score and the IPAQ total

physical activity score or between the NSSQ emotional support subscale and the IPAQ total physical activity score ( $p=.652$ ) or the NSSQ tangible support and the IPAQ total physical activity score ( $p=.696$ ). These findings suggest that there is no statistically significant relationship between social support and the level of physical activity in OTRTDs.

Table 10

*Correlation between Total Physical Activity and Total Functional Score*

	Total Functional Score	Total Physical Activity MET Score
Total Functional Score		
Pearson correlation	1	.032
Sig. (2-tailed)		.840
N	42	42
Total Physical Activity MET Score		
Pearson correlation	.032	1
Sig. (2-tailed)	.840	
N	42	42

*Note.* Two-tailed test  $\alpha=.05$  MET=Metabolic Equivalents. MET estimates of the IPAQ were calculated based on the three categories of Low, Moderate, and High levels of physical activity and then combined.



Table 11

*Correlation between Total Physical Activity and Emotional Support*

	Total Physical Activity MET Score	Emotional Support Subscale
Total Physical Activity MET Score		
Pearson correlation	1	.072
Sig. (2-tailed)		.652
N	42	42
Emotional Support Subscale		
Pearson correlation	.072	1
Sig. (2-tailed)	.652	
N	42	42

Note. Two-tailed test  $\alpha=.05$

Table 12

*Correlation between Total Physical Activity and Tangible Support*

	Total Physical Activity MET Score	Aid (Tangible Support) Subscale
Total Physical Activity MET Score		
Pearson correlation	1	-.062
Sig. (2-tailed)		.696
N	42	42
Aid (Tangible Support) Subscale		
Pearson correlation	-.062	1
Sig. (2-tailed)	.696	
N	42	42

Note. Two-tailed test  $\alpha=.05$

Post hoc tests (for a two-tailed test with  $\alpha=.05$ ) were calculated to compare the total support, emotional support, and tangible support of the NSSQ to the total physical activity score of the IPAQ on the following demographics: average number of nights away from home per week, years driving, type of driving, average nights away from

home, number of days per week you feel you should exercise, do you feel you need to exercise if you are already physically active at work, have you ever been taught ways to increase your physical activity while on the road, and are you interested in increasing your physical activity. Tangible support and the group who answered yes to the following question, “Do you feel that you should exercise if you are already physically active at work?” had significantly higher levels of tangible support than the no group ( $p=0.048$ ). Although the findings from this study may not indicate a correlation between social support and the level of physical activity in OTRTDs, they demonstrate that those with increased levels of support (responded yes) are aware that it is important to increase their physical activity.

Table 13

*Emotional Support and Aid*

	t-test for Equality of Means		
	t	df	Sig. (2-tailed)
Total Physical Activity MET Score	.766	40	.448
Total Functional Score	1.655	40	.106
Emotional Support Subscale	1.458	40	.153
Aid (tangible support) Subscale	2.038	40	.048

*Note:* Equal variances assumed. Two-tailed test with  $\alpha=.05$ , df= degrees of freedom, Sig= significance.

Pearson  $r$  correlation coefficient was completed to determine if there was a relationship between age, gender, marital status, education, number of years driving, state of residency, and total physical activity and total social support (emotional and tangible support). Results showed that there were no significant correlations.

Participants also provided some verbal feedback that was not listed on the surveys. Three stated that filling out the surveys reminded them of how little they were exercising and how they knew they needed to make improvements to change this. Over 70% stated that the work environment provided little time or resources for exercise. Those who did exercise stated that they would run in truck stop parking lots when they were parked, would use dumb bells in their trucks, and would do push-ups and sit-ups in their trucks. Almost everyone stated that there were very few, if any, designated areas to exercise while they were on the road. These participants stated that finding ways to exercise within your truck was very important.

Another interesting aspect that was discussed by drivers was the role of pets in both social support and physical activity. Three drivers stated that they had dogs who rode around with them in the cab of their semis while they were on the road. They stated that the pets provided a huge amount of social support and prevented loneliness. They also encouraged drivers to get out of the trucks and make more frequent stops in order to walk their pets. One of the drivers who owned a pet suggested that the role of social support in the form of a pet could also be examined in the future.

### **Discussion of Findings**

The results of this study suggest that there is no statistically significant correlation between social support and the level of physical activity in OTRTDs. These results must be interpreted with caution, since some of the items may have been incorrectly filled out. For example, the item on number of hours per day sitting on the IPAQ was incorrectly filled out.

Buxton et al, (2009) and Sorenson et al., (2009) examined ways to increase healthy eating habits in their “Gear Up For Health” study. The authors found that decreased tobacco rates, lower job strain, increased supervisor support, and adequate sleep were all associated with healthier eating habits. Increased supervisor support was the only type of social support identified. In the current study, 100% of participants listed family members or friends as their social support. Supervisors were not listed as a source of social support, even when employers had been listed as providing increased education on ways to increase physical activity while on the road. The results from the “Gear Up for Health” study indicated that the association between tobacco usage, job strain, social support, diet, and sleep should be considered when developing interventions to increase health promotion in OTRTDs (Buxton et al., 2009; Sorenson et al., 2009). The findings in the current study did not indicate that social support and increased health promotion (physical activity) had any type of relationship. Those with higher levels of tangible social support appeared to have lower levels of physical activity.

Olson et al. (2009) completed a single group pre- post-test design to evaluate intervention effectiveness for reducing body weight and increasing healthful and safe behaviors in 29 OTRTDs from four trucking carriers based in the Pacific Northwest region of the U.S. The authors used a weight loss competition, computer-based training, behavioral self-monitoring, and motivational interviewing. Clinical and fitness data remained relatively stable pre- and post-intervention, with a near significant reduction in waist-to-hip ratio, waist circumference, and 6-minute walking test scores. During the exit interview, drivers expressed a desire for more frequent communication with their fellow teammates during the competition, indicating the importance of social support for maintaining physical activity (Olson, et al., 2009).

In the current study, 90% of the OTRTDs listed friends as part of their social network on the NSSQ. It is not known from the results how many of these friends were co-workers. Although the Olson et al. (2009) study suggests that coworkers in a team environment may be an important factor in an exercise intervention, the OTRTDs in the current study did not appear to have increased levels of physical activity based on relationships with coworkers. The importance of this comparison is that future studies that are designed around weight loss interventions for OTRTDs may need to focus more on the role that social support of fellow co-workers and teammates may have in increasing the levels of physical activity or increasing physical activity.

The Task Force on Community and Preventative Services (2002) released its findings on a meta-analysis that examined ways to increase physical activity in communities. The Task Force recommended creation of or increased access to places for physical activity combined with informational outreach activities. Several work site programs were reviewed. The task force found an increase in physical activity and improved physical fitness among adults involved in work site programs, which led the task force to encourage work environments that foster physical activity.

Work sites were not directly examined in OTRTDs in the current study, but were indirectly examined by asking how many nights away from home were spent each week, where trucks were parked at night, and if drivers had ever been taught ways to increase their physical activity on the road. The results indicated that the current work conditions of OTRTDs do not encourage physical activity while on the road, as even those who had received education on increasing physical activity while on the road, did not have higher levels of physical activity. Participants stated that the average number of nights away from home per week was 3.4 (SD=.734). Approximately 92.9% of participants parked

their trucks at truck stops or rest stops at night. These areas typically do not provide a supportive environment for exercise. Physical barriers may play a much larger part in the OTRTD population and may need to be further examined when creating future interventions. This may indicate that higher levels of social support from the work environment are needed in order to increase levels of physical activity in OTRTDs. Employers may need to more thoroughly examine the work environments of their drivers and invest resources in providing equipment for physical activity at truck stop locations.

The Task Force on Community and Preventative Services (2002) did indicate that social support in the form of mass media campaigns, classroom-based health information, and family-based social support did not reveal a direct relationship with levels of physical activity. This was consistent with the results of the current study, which showed that the results did not show an increase in physical activity even with reported high levels of family based social support.

The last notable comparison between the current study and past research is from another large meta-analysis from Wendel-Vos, et al. (2007) that examined environmental factors as potential determinants of various types and intensities of physical activity among men and women. The authors used the ANGELO framework to determine environmental categories of physical, socio-cultural, economic, and physical activity. The analysis revealed two environmental determinants of physical activity: (a) social support of having a companion for physical activity and connectivity of trails, and (b) availability of physical activity equipment (Wendel-Vos et al., 2007). Although the current study indicated that there was no relationship between social support and the level of activity in OTRTDs, participants were not asked if they had a companion for physical activity or if they had equipment available to them for physical activity. Based

on the number of drivers who stated they drove alone (64.3%) and based on the number of drivers who parked at truck stops/waysides at night (92.9%), it is possible that most of the participants did not have a companion for physical activity and that the work environment did not provide equipment that could be used for physical activity. This is an important factor to consider in future research, as the results of the current study indicated that these key types of social support (companion for physical activity and availability of physical activity equipment) may be important in increasing the level of physical activity. The findings indicated that social support in itself may not be enough of a factor in increasing levels of physical activity in OTRTDs. Environmental barriers may provide challenges that need to be examined for this population.

### **Chapter Summary**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. Participants were chosen through convenience sampling at truck stops in the Midwest. A Pearson correlation coefficient was calculated by comparing the total physical activity score of the IPAQ to the total functional score, the emotional support subscale score, and the tangible support subscale score of the NSSQ. The results indicated that there was not a relationship between social support and the level of physical activity in OTRTDs. No previous study was found on the relationship between social support and physical activity in OTRTDs. Due to this, the results of this study were not entirely consistent with other studies that have examined physical activity in OTRTDs. Social support from co-workers, employers, and exercise companions has shown to increase levels of physical activity, but these specific types of social support were not examined in the current study. Past

research indicated that those with high levels of family social support do not have higher levels of physical activity, and this remained true for the current study. Results need to be interpreted with caution, since the sample size was small, and participants may have misinterpreted the questions on the surveys and hence, may have responded incorrectly.



## **Chapter V**

### **Summary, Conclusions, and Recommendations**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. The results of this study indicated that there was no relationship between social support and the level of physical activity in OTRTDs. In this chapter, the summary, conclusions, recommendations for further research, and practice and limitations are discussed.

#### **Summary**

The health of OTRTDs has captured greater attention in recent years as healthcare providers and employers have discovered alarming trends in the population (Martin et al., 2009; Olson et al., 2009). High obesity rates indicate that OTRTDs may have a low level of physical activity. In 2006, a U.S. Department of Transportation survey showed 90% of truck drivers were overweight and 50% were obese, percentages significantly larger than the general population. Over the road truck drivers have unique occupational barriers, such as long hours of sitting, lack of access to work out facilities, and lack of time that may hinder them in carrying out health promotion activities such as physical activity.

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in over the road truck drivers. The hypothesis was that there is a positive relationship between social support and the level of physical activity in over the road truck drivers. Those with higher levels of social

support have higher levels of physical activity and those with lower levels of social support have lower levels of physical activity.

Pender's Health Promotion Model (HPM) was the framework for this study. The level of physical activity in OTRTDs can be directly related to the HPM concepts. An OTRTD has a prior level of physical activity to serve as a baseline for health promotion that is influenced by his biological, psychological and socio-cultural factors. The socio-cultural factor may be most important due to the lifestyle of living on the road. Each OTRTD possesses his own perceived benefits and barriers to physical activity, with barriers appearing to be greater. These barriers appeared to include hours driving, nights away from home per week, lack of access to exercise facilities or equipment, and lack of employer support. Perceived self-efficacy was an issue due to the nature of the environment and the belief that time and space were not readily available for physical activity. Over 70% stated that the work environment provided little time or resources for exercise. Interpersonal influences (biological, psychological, and socio-cultural) and situational influences (the triggers within an environment to either promote or negate an action) appeared to diminish an increase in physical activity, as well. All of these factors influence the commitment to a plan of action. With multiple negative factors influencing the commitment to increase physical activity, health promotion outcomes remain low. The immediate competing demands and preferences of being on the road appear to be difficult barriers to overcome for OTRTDs.

Only one research study on OTRTDs has shown any increase in levels of physical activity that might be related to social support. The literature suggests that various types of social support seem to be associated with increased levels of physical activity, however studies demonstrate contradicting results. Although community

support seems to be strongly associated with increased physical activity, family support has shown inconsistent results. Work related programs have appeared to be successful in the past.

A quantitative descriptive correlational research design was used for this study. Convenience sampling was used to select participants at two different truck stop locations in the Midwest. A demographic Truck Driver Questionnaire, the Norbeck Social Support Questionnaire (NSSQ) and the International Physical Activity Questionnaire (IPAQ) were used for data collection. Data were collected after obtaining IRB approval. A pilot study was conducted at different times at the same facility. For the full study, two different truck stops in the Midwest were chosen for data collection. Each site was visited on two separate occasions. When the surveys were distributed for the full study, 24 participants expressed concern about the length of the surveys and needed additional instruction when filling them out. Six participants turned in the surveys in without completing them.

A total of 54 surveys were distributed between the two pilot studies and the full study, with 42 usable surveys for analysis. Descriptive and inferential statistics were used to analyze the data. The 42 participants were from different states in the U.S. Thirty one percent were from Wisconsin, with 69% from other states. At least 85.8% of participants spent four nights a week away from home. Participants were asked if they had ever been taught ways to increase their physical activity while on the road, with 42.9% responding in the affirmative. They listed coworkers, employers, spouses, therapists, healthcare workers, and online research as sources for the education on physical activity. When asked if they were interested in learning ways to increase their physical activity on the road, 71.4% said yes.

The IPAQ showed that 28.6% of participants had a low level of physical activity, 31% had a moderate level, and 40.5% had a high level of physical activity. Of the 42 participants, 13 answered the last item (hours sitting per week day) with a number greater than 24. For those surveys that had a number greater than 24 listed, the number was divided by 7, and the result was then substituted for the number of hours sitting per week day. The number was divided by 7 because the IPAQ looks at the last 7 days of physical activity.

For the NSSQ, the average number of people listed in the social network was 6.43, with a range of one to 24 and a standard deviation of 4.197. Approximately 38% reported suffering a recent loss of someone they had considered part of their social network, and 64.3% stated that the loss did not affect them in any way. Social support was broken down into subscales of emotional support and tangible support and then combined for a total functional support score. The emotional support subscale mean was 84.21, with a range of 11 to 367 and a standard deviation of 60.17. Tangible support showed a mean of 39.80, with a range of 2 to 134 and a standard deviation of 25.78. The total functional support score was the overall score between emotional and tangible support. The mean was 124.02, with a range of 14 to 501 and a standard deviation of 84.64. Cronbach's alpha was calculated at .923. The results show wide ranges and large standard deviations. This is due to the differences in the number listed for the social network for each person. The mean for this was 6.43, but the range was 1 to 24. Of the participants, 21.4% (9) listed five people in their social network. Only 2.4% (1) listed 24. If a person only listed one person in their social network, their total scores would be significantly lower than if someone listed 24 people in their network.

This leads to a very large range for the categories of emotional support, tangible support, and total functional support.

Pearson correlation coefficient was calculated by comparing the total physical activity score to the total functional score, the emotional support subscale score, and the tangible support subscale score of the. Tables 10, 11, and 12 show that there were no significant correlations ( $p=.840$ ) between the NSSQ total functional score and the IPAQ total physical activity score or between the NSSQ emotional support subscale and the IPAQ total physical activity score ( $p=.652$ ) or the NSSQ tangible support and the IPAQ total physical activity score ( $p=.696$ ). These findings suggest that there is no statistically significant relationship between social support and the level of physical activity in OTRTDs.

Post hoc tests (for a two-tailed test with  $\alpha=.05$ ) were calculated for a variety of items with one significant result. When comparing tangible support to those who answered yes to the question, "Do you feel that you should exercise if you are already physically active at work?" the yes group had significantly higher levels of tangible support than the no group ( $\text{sig}=.048$ ). These results do not indicate a relationship between social support and the level of physical activity in OTRTDs, but may indicate that those with increased levels of support realize that it is important to increase their physical activity. No previous study was found on the relationship between social support and physical activity in OTRTDs. Social support from co-workers, employers, and exercise partners has shown to increase levels of physical activity, but these specific types of social support were not examined in the current study. Results of previous research indicated that those with high levels of family social support do not have higher levels of physical activity, and this remained true for the current study.

## Conclusions

It appears that social support in itself may not be enough of a factor to increase levels of physical activity in OTRTDs. The truck driver's environmental barriers provide challenges that need to be examined for this population. This population encounters long hours, multiple days away from home, work environments that lack work out facilities or equipment, and demands that emphasize pay based on mileage achieved. In order for changes to be made in increasing physical activity in this population, employers may need to start examining the ways that they can promote healthier work environments. More studies need to examine if work-related interventions, such as team based competitions and access to work out equipment, would improve health outcomes for this population.

The Task Force on Community and Preventative Services (2002) did indicate that social support in the form of mass media campaigns, classroom-based health information, and family-based social support did not reveal a direct relationship with levels of physical activity. Although very extensive, this study was conducted 8 years ago and future research may indicate different findings. Despite this recommendation, OTRTDs may benefit from direct classroom time that explores and discusses the challenges of maintaining health while on the road. Employers and administrators need to consider the challenges of long hours of driving resulting in a lack of time or access to exercise equipment and start to focus on finding ways to increase health promoting activities.

Employers should develop interventions that provide increased time for, and access to, work out equipment. In order for such changes to take place, the current

work environment of OTRTDs that centers on increased pay for increased mileage may need to be changed. Until this happens, providers and nurses need to encourage OTRTDs to find creative ways to increase their levels of physical activity while on the road. Of the 17 participants who stated that they had been taught ways to increase their physical activity while on the road by someone, only one stated that this was from a healthcare worker. This is alarming and needs to change in order to help an at-risk population. When asked if they were interested in increasing their physical activity while on the road, 71.4% said that they were.

Pender's Health Promotion Model was used as the framework for this study (Pender et al., 2006). The framework proved useful in examining how external influences can hinder or promote a person's overall health promotion. Although the results of this study did not indicate that increased social support is related to increased levels of physical activity, Pender's model could be very useful in creating health promotion interventions in the future for OTRTDs.

### **Limitations**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. Though the findings of the study suggested that there was no relationship between social support and the level of physical activity in OTRTDs, a number of limitations may have contributed to these results.

The first limitation was related to the length and complexity of the IPAQ and the NSSQ questionnaires. Thirteen participants filled out parts of the IPAQ incorrectly and 6 participants did not fill out the NSSQ. Twenty four participants commented on the length

of the surveys and the amount of time it took to fill them out. Of the 24 participants who needed additional assistance, over 50% of them found the IPAQ to be straight forward, but all felt that the NSSQ was complex to answer. The results of the two pilot studies did not indicate that there were concerns about the IPAQ being filled out incorrectly, and hence the errors that were made in filling out this questionnaire during the actual full study were unanticipated. Thirty OTRTDs reported they felt intimidated by the length and appearance of the surveys and declined to participate. Ten stated they were afraid they would answer a question wrong or that they were not smart enough to answer the questions on the surveys.

The extreme mobility of this population was another limitation. All of the drivers entered the truck stop facilities to fuel up their trucks or to get something to eat. Approximately 15 OTRTDs did not have time to fill out the surveys even though they had wanted to help this researcher. One driver offered to donate money to the cause of the research study instead of filling out the survey because he did not have time. Most of the surveys were collected while drivers were eating in the truck stop restaurants. About 90% were willing to fill out the surveys if they were already sitting for a period of time, and almost all were eager to help when they learned that the purpose of the study was to examine the relationship between social support and levels of physical activity.

### **Implications for Practice**

The nursing profession strives to increase health outcomes in all types of patients. Primary prevention is the key to building a stronger and healthier society and interventions based on this type of prevention are becoming more and more important. Over the road truck drivers are often seen in the primary care setting for DOT physicals



and management of chronic conditions. The research has clearly shown that this population is in dire need of intervention in order to increase health outcomes and decrease overall medical costs. When asked how many days per week that participants felt they should exercise, 50% said daily. This indicates that the desire to participate in physical activity is present.

Healthcare providers need to encourage increased exercise/health promoting activities while on the road. One of the problems that providers may face is finding ways for drivers to do this. There are currently limited resources available to OTRTDs to increase physical activity levels. More research needs to be done to determine what types of exercise OTRTDs can do while on the road that is both effective and safe. Providers may need to focus their research efforts on ways to help this population. On a smaller scale, providers need to take the time to talk to drivers about the barriers they encounter. By addressing the environmental issues with the patient, the provider and the patient may be able to come up with creative and helpful ways for OTRTDs to increase their physical activity levels.

### **Implications for Research**

More research needs to be done on increasing health outcomes in OTRTDs. Results from this study have indicated that OTRTDs encounter barriers that may require creative ways to increase health promotion.

1. The IPAQ questionnaire is a highly valid and reliable tool that has been used in other samples and settings. The fact that it was confusing to the OTRTDs indicates that this tool may not be valid and reliable for this population. Hence, a different tool to measure level of physical activity needs to be used.

2. The mobility and time constraints of OTRTDs can be a limitation. Surveys that are less than 5 minutes and are uniquely tailored for OTRTDs to fill out with simple instructions should be developed. People who are in a hurry may tend to make more mistakes when filling out forms or surveys, and drivers are no exception.

3. Also, the environment in which the surveys are administered should be taken into consideration. Shorter and simpler surveys need to be developed for this group. When asking about physical activity, questions regarding sitting and moving need to take into account that drivers spend most of their time sitting while driving, but that their exercise and moving may be forms of doing exercises in the cab of their truck, walking in truck stop parking lots, or walking their dogs.

4. A qualitative study to determine ways to increase physical activity in OTRTDs should be conducted by interviewing several OTRTDs and discussing their perceptions of exercise and healthy eating. To develop health promotion programs for this group, possible challenges to a qualitative study include mobility of the population. This can be minimized by recruiting OTRTDs who reside in the same state as the researcher to schedule interviews.

## **Chapter Summary**

The purpose of this study was to determine if there was a relationship between social support and the level of physical activity in OTRTDs. The results indicated that there was no relationship between social support and the level of physical activity in OTRTDs. This chapter provided a summary of the study and limitations, conclusions, implications, and recommendations based on the findings of the research study. Pender's Health Promotion Model was the theoretical framework for this study. It

appears that social support in itself may not be enough of a factor in increasing levels of physical activity in OTRTDs. The barriers of increased hours sitting and driving and lack of access to exercise equipment need to be addressed. Employers and providers need to invest more time in finding ways to increase the health of drivers. Specific surveys may need to be created for this population due to their time constraints and work environment in order to collect accurate information. A qualitative study may provide great benefit in helping to develop health promotion programs by gathering much needed information and insight from the drivers themselves. Although the results of this study indicated a lack of relationship between social support and physical activity in OTRTDs, there were many recommendations and implications for research and practice identified.

APPENDIX A  
IPAQ INSTRUMENT

# **INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRES**

## **IPAQ: SHORT LAST 7 DAYS SELF-ADMINISTERED FORMAT**

**FOR USE WITH YOUNG AND MIDDLE-AGED ADULTS**

The International Physical Activity Questionnaires (IPAQ) comprises a set of 4 questionnaires. Long (5 activity domains asked independently) and short (4 generic items) versions for use by either telephone or self-administered methods are available. The purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health-related physical activity.

### **Background on IPAQ**

The development of an international measure for physical activity commenced in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken in 12 countries (14 sites) across 6 continents during 2000. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages. IPAQ is suitable for use in regional, national and international monitoring and surveillance systems and for use in research projects and public health program planning and evaluation. International collaboration on IPAQ is on-going and an international prevalence study is under development.

### **Using IPAQ**

Worldwide use of the IPAQ instruments for monitoring and research purposes is encouraged.

It is strongly recommended, to ensure data quality and comparability and to facilitate the development of an international database on health-related physical activity, that

- no changes be made to the order or wording of the questions as this will affect the psychometric properties of the instruments,
- if additional questions on physical activity are needed they should follow the IPAQ items,
- translations are undertaken using the prescribed back translation methods (see website)
- new translated versions of IPAQ be made available to others via the web site to avoid duplication of effort and different versions in the same language,
- a copy of IPAQ data from representative samples at national, state or regional level be provided to the IPAQ data storage center for future collaborative use (with permission) by those who contribute.

### **More Information**

Two scientific publications presenting the methods and the pooled results from the IPAQ reliability and validity study are due out in 2002.

More detailed information on the IPAQ process, the research methods used in the development of the IPAQ instruments, the use of IPAQ, the published papers and abstracts and the on-going international collaboration is available on the IPAQ web-site.

**[www.ipaq.ki.se](http://www.ipaq.ki.se)**

**INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE****IPAQ: SHORT LAST 7 DAYS SELF-ADMINISTERED FORMAT****FOR USE WITH YOUNG AND MIDDLE-AGED ADULTS**

*NOTE: EXAMPLES OF ACTIVITIES MAY BE REPLACED BY CULTURALLY RELEVANT  
EXAMPLES WITH THE SAME METS VALUES (SEE AINSWORTH *ET AL.*, 2000).*

## INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. This is part of a large study being conducted in many countries around the world. Your answers will help us to understand how active we are compared with people in other countries.

The questions are about the time you spent being physically active in the last 7 days. They include questions about activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Your answers are important.

**Please answer each question even if you do not consider yourself to be an active person.**

**THANK YOU FOR PARTICIPATING.**

In answering the following questions,

- ♦ **vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal.
- ♦ **moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

- 1a. During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling,?

Think about *only* those physical activities that you did for at least 10 minutes at a time.

\_\_\_\_\_ days per week  $\Rightarrow$

or

☐ none

- 1b. How much time in total did you usually spend on one of those days doing vigorous physical activities?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

- 2a. Again, think *only* about those physical activities that you did for at least 10 minutes at a time. During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

\_\_\_\_\_ days per week  $\Rightarrow$

or

☐ none

- 2b. How much time in total did you usually spend on one of those days doing moderate physical activities?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

- 3a. During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time? This includes walking at work and at home, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

\_\_\_\_\_ days per week  $\Rightarrow$

or

☐ none

- 3b. How much time in total did you usually spend walking on one of those days?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

The last question is about the time you spent **sitting** on weekdays while at work, at home, while doing course work and during leisure time. This includes time spent sitting at a desk, visiting friends, reading traveling on a bus or sitting or lying down to watch television.

4. During the last 7 days, how much time in total did you usually spend *sitting* on a week day?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

This is the end of questionnaire, thank you for participating.



APPENDIX B  
NSSQ INSTRUMENT

0 = not at all  
 1 = a little  
 2 = moderately  
 3 = quite a bit  
 4 = a great deal

Question 5:

If you needed to borrow \$10, a ride to the doctor, or some other immediate help, how much could this person usually help?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

[AID5]

Question 6:

If you were confined to bed for several weeks, how much could this person help you?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

[AID6]

Number \_\_\_\_\_

Date \_\_\_\_\_ [IDNO]

## Question 7:

How long have you known this person?

- 1 = less than 6 months  
 2 = 6 to 12 months  
 3 = 1 to 2 years  
 4 = 2 to 5 years  
 5 = more than 5 years

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
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15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

[DURATION]

## Question 8:

How frequently do you usually have contact with this person? (Phone calls, visits, or letters)

- 5 = daily  
 4 = weekly  
 3 = monthly  
 2 = a few times a year  
 1 = once a year or less

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_

[FREQUON]

## PERSONAL NETWORK

First Name or Initials

Relationship

- |           |       |         |
|-----------|-------|---------|
| 1. _____  | _____ | [SOU1]  |
| 2. _____  | _____ | [SOU2]  |
| 3. _____  | _____ | [SOU3]  |
| 4. _____  | _____ | [SOU4]  |
| 5. _____  | _____ | [SOU5]  |
| 6. _____  | _____ | [SOU6]  |
| 7. _____  | _____ | [SOU7]  |
| 8. _____  | _____ | [SOU8]  |
| 9. _____  | _____ | [SOU9]  |
| 10. _____ | _____ | [SOU10] |
| 11. _____ | _____ | [SOU11] |
| 12. _____ | _____ | [SOU12] |
| 13. _____ | _____ | [SOU13] |
| 14. _____ | _____ | [SOU14] |
| 15. _____ | _____ | [SOU15] |
| 16. _____ | _____ | [SOU16] |
| 17. _____ | _____ | [SOU17] |
| 18. _____ | _____ | [SOU18] |
| 19. _____ | _____ | [SOU19] |
| 20. _____ | _____ | [SOU20] |
| 21. _____ | _____ | [SOU21] |
| 22. _____ | _____ | [SOU22] |
| 23. _____ | _____ | [SOU23] |
| 24. _____ | _____ | [SOU24] |

PLEASE BE SURE YOU HAVE RATED EACH PERSON ON EVERY QUESTION. GO ON TO THE LAST PAGE.

9. During the past year, have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason?

\_\_\_\_\_ 0. No  
 \_\_\_\_\_ 1. Yes

[LOSS]

IF YOU LOST IMPORTANT RELATIONSHIPS DURING THIS PAST YEAR:

- 9a. Please indicate the number of persons from each category who are *no longer available* to you.

_____ spouse or partner	[LOSS1]
_____ family members or relatives	[LOSS2]
_____ friends	[LOSS3]
_____ work or school associates	[LOSS4]
_____ neighbors	[LOSS5]
_____ health care providers	[LOSS6]
_____ counselor or therapist	[LOSS7]
_____ minister/priest/rabbi	[LOSS8]
_____ other (specify) _____	[LOSS9]

[LOSSNO]

- 9b. Overall, how much of your support was provided by these people who are no longer available to you?

[LOSSAMT]

\_\_\_\_\_ 0. none at all  
 \_\_\_\_\_ 1. a little  
 \_\_\_\_\_ 2. a moderate amount  
 \_\_\_\_\_ 3. quite a bit  
 \_\_\_\_\_ 4. a great deal

APPENDIX C  
TRUCK DRIVER QUESTIONNAIRE

## TRUCK DRIVER QUESTIONNAIRE

1. Gender
  - a. Male
  - b. Female
2. Age \_\_\_\_\_
3. Current State of Residence \_\_\_\_\_
4. Marital Status
  - a. Single
  - b. Married
  - c. Divorced
  - d. Widowed
5. Number of Children?
  - a. 0
  - b. 1-2
  - c. 3-4
  - d. 5 or more
6. Grades you completed in school?
  - a. K-8
  - b. 9-12
  - c. GED
  - d. Technical College
  - e. University
  - f. Graduate
7. Number of years driving truck?
  - a. 1-3
  - b. 4-6
  - c. 7-10
  - d. 11 or more
8. Truck Driving Employment Status?
  - a. Independent
  - b. Private Owner
  - c. Company
  - d. Other

9. Type of Driving?
- Single/Alone
  - Husband and Wife Team
  - Team Driving
  - Both Team and Single/ Alone
10. Average number of nights away from home per *week*?
- 0
  - 1-3
  - 4-6
  - More than a week away from home at a time
11. How many hours of sleep do you get each night while on the road? \_\_\_\_\_
12. Where do you park your truck at night?
- Truck Stop
  - Wayside/Rest Area
  - Off Ramp
  - On Ramp
  - Other \_\_\_\_\_
13. How many days per week do you feel you should exercise?
- None
  - 1-3
  - 4-5
  - Every day
14. Do you feel that you need to exercise if you are already physically active at work?
- Yes
  - No
15. Have you ever been taught ways to increase your physical activity while on the road by a coworker, healthcare provider, or employer?
- Yes, if so by whom:  
\_\_\_\_\_
  - No
16. Are you interested in increasing you physical activity while on the road?
- Yes
  - No

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