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Move Montana: An Exercise Program for Children, Adolescents, and Their Families

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Project: Move Montana: An Exercise Program for Children, Adolescents and Their Families

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Abstract

Despite advances in medical science, the prevalence of obesity in the US has more than doubled in the last three decades, to over 72 million people (CDC, 2009). The purpose of this project was to pilot an exercise program that would increase physical activity in a group of adolescents and one of their parents or guardians. A convenient sample of 10 adults and eight adolescents returned surveys and exercised through the entire eight weeks (N = 18). Ten of the 18 participants (56%), six parents and four adolescents, reported increased frequency of exercise each week throughout the eight week period. Of the participants who exercised for the eight week period, only four of 18 (22%) used a pedometer (three adults and one adolescent). Over the eight weeks, one adolescent weight did not change, five lost weight and, two gained weight; four adults weight did not change, six lost weight, and no one gained weight. When initial BMIs were calculated, two of the adolescents were obese, four were overweight, one was underweight, and one was normal; six adults were obese, none were overweight, and four were normal. Over the eight week exercise program, one adolescent BMI remained unchanged, six had a reduction, and one increased; four adults BMI remained unchanged, six were lowered, and none increased. Using the Wilcoxon Signed Rank Test, the BMI and weight loss of adult participants pre and post exercise was significant ($\underline{Z} = 0.027$, $P < 0.05$) but not significant for adolescents. Findings demonstrate that nurse practitioners in a family health care practice can encourage adolescents and their families to increase physical activity that can result in weight loss, a decrease in BMI, and may help to reduce overweight and obesity in families.

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Introduction

Obesity in the U.S. is a well-known health problem for both adolescents and adults. This pilot project, Move Montana, is designed to increase physical activity for a parent or guardian and adolescent residing in Montana to determine if increasing activity can help adolescents reduce weight. It is hoped that involvement of a parent or guardian in an exercise program may motivate an adolescent to be more active.

Purpose of the Project

The purpose of this project is to pilot an exercise program that will impact adolescents with obesity in a nurse practitioner family health care practice in a rural state by: (a) implementing an exercise program, (b) providing weekly support and monitoring of the program, and (c) evaluating weekly progress toward increasing physical activity in a group of adolescents and one of their parents or guardians.

Problem and rationale for project

According to the Center for Disease Control (CDC) the incidence of obesity has tripled in the last 30 years (CDC, 2012). Currently, more than one third of children and adolescents are obese or overweight and childhood obesity that persists into adulthood is associated with more severe obesity (Dietz, 2004). It is estimated that adolescents who are obese have a 70 percent chance of becoming an obese adult increasing to 80 percent if the teen has one obese parent (U.S. Surgeon General, 2012). Children who are obese are at risk for diseases previously thought to develop in adulthood including bone and joint problems, sleep apnea, hypertension, type II diabetes, and cardiovascular disease (CDC, 2011). Obese children and adults are also more at risk for certain types of cancer: breast, ovarian, esophageal, colon, kidney, thyroid, gallbladder, prostate, multiple myeloma, and

Hodgkin's lymphoma (CDC, 2011). Obese children and adolescents are faced with ongoing health problems into adulthood along with psychosocial issues such as poor self-esteem, and social stigma (Dietz, 1998). Many children and adolescents deal with depression as a consequence of obesity (Dietz).

Baseline Data

Obesity is one of the only chronic conditions that can be easily recognized as soon as the patient enters the clinic and yet was not officially defined by Medicare as a disease or injury until July of 2004 (CMS, 2009). Despite advances in medical science decreasing infant mortality rate, increasing life expectancy by 30 years, reducing deaths from infectious disease to the lowest level in modern history, and increasing the quality of life of people with chronic illness, the prevalence of obesity in the United States has more than doubled in the last three decades, to over 72 million people (CDC, 2009). The increase in obesity transcends all ages, genders, races, and ethnic groups (Surgeon General, 2012). National, state, local governments and employers have increased their efforts to decrease obesity since 1998. Data obtained from the Center for Disease Control (CDC) Behavior Risk Factor Surveillance System (BRFSS) found from 1998 to 2006 obesity rates increased from 18.3 to 25.1 percent (CDC, 2009). Since the BRFSS data is self-reported, this may be an underestimation of the magnitude of the problem.

Adult obesity. Body Mass Index (BMI) is calculated as weight in kilograms divided by height in meters squared. Overweight in adults is defined as BMI between 25 and 29.9. Obesity is defined as a BMI over 30 (Esherick, Clark, & Slater, 2012). In 1999, 61 percent of adults, age 20 to 74 years in the United States were classified as overweight. In 2010 results from the National Health and Nutrition Examination Survey

indicated 68 percent of adults were overweight (Flegal, Carrol, Ogden, & Curtain, 2010). In 2009, one in four adults was considered obese (CDC, 2009).

Child and adolescent obesity. Overweight in children and adolescents is defined as equal to or greater than the 85th percentile but less than the 95th percentile for age and gender (CDC, 2009). Obesity in children and adolescents is defined as equal to or greater than the 95th percentile for age and gender (CDC, 2009). In 1999 13 percent of children 6 to 11 years of age and 14 percent of teens aged 12 to 19 were overweight. By 2002, more than 16 percent of adolescents were overweight (CDC, 2009). From 2007 to 2008 the prevalence of obesity in children and adolescents in the U.S. was 16.7 percent and remained unchanged 2009 to 2010 (Ogden, Carroll, Kit, & Flegal, 2012). U.S. citizens are more overweight than ever before making obesity one of the most significant health care problems in America (CDC, 2009).

Obesity in Montana. In Montana, the obesity rate among adults is currently 23.8 percent, making Montana the eighth least obese state [Robert Wood Johnson Foundation (RWJF), 2012]. Fifteen years ago, the obesity rate for Montanans was 13 percent. Montana obesity rate has risen over 80 per cent in the last 15 years (RWJF). In comparison, Colorado has the lowest obesity rate at 19.8 percent which would have been the highest obesity rate reported in 1995 (RWJF).

Among Montana adolescents ages 9 through 12 grade, 11.9 percent are considered overweight (between the 85th and 95th percentile on standard growth charts) and 10.4 percent are considered obese (equal to or greater than 95 percentile) (CDC, 2009). More alarming, Montana children have higher overweight and obesity rates than adolescent Montanans. Children in the 2 to 5 year age range have an overweight rate of

15. 9 percent and obesity rate of 12.2 percent (CDC, 2009), increasing the child's chance of becoming obese adolescents as well as adults (CDC, 2009).

Significance of obesity to health care and nursing practice

It is estimated there are over 300,000 premature deaths each year that can be directly attributed to obesity (U. S. Surgeon General, 2012). Obesity is associated with increased incidence of cardiovascular disease, high cholesterol, hypertension, some types of cancers, type II diabetes, osteoarthritis, gallbladder disease, depression, stroke, respiratory diseases, sleep apnea, and increased complications during surgery and pregnancy (CDC, 2009). Adipose tissue accumulates around the vital organs of the body impeding full functioning. Even a weight gain of 10 to 20 pounds can increase the risk of death in adults 30 to 64 years old. People who are over a BMI of 30 have a 50 to 100 percent increased risk of early death from all causes (CDC, 2009).

Obesity is associated with an increased incidence of cardiovascular disease in people with BMI over 25 (CDC, 2009). In addition, hypertension is twice as common in overweight and obese individuals as in people of normal weight putting them at increased risk of cerebral vascular accidents. Obesity is associated with higher levels of triglycerides and high density lipoproteins (CDC, 2009).

Obesity increases risk of death for both mother and baby during pregnancy. Pregnant women who are obese are 10 times more likely to develop gestational diabetes and complications during pregnancy (CDC, 2009). Gestational diabetes increases fetal birth weight, increases the likelihood of caesarean birth, and low blood sugar in the newborn. Birth defects such as neural tube defects and spina bifida are increased if the mother is obese (CDC).

Obesity increases the risk of certain types of cancers including endometrial, breast, colon, gallbladder, prostate, and kidney. Women who gain more than 20 pounds after age 18 double their chance of developing postmenopausal breast cancer (CDC, 2009). Sleep apnea is more common in people with obesity as is the prevalence of asthma (CDC, 2009). Obese people have decreased physical endurance and limited mobility. Obesity is a risk factor for gallbladder disease, incontinence, surgical complications, depression, and death. Social stigmatization leads to poor self-esteem and psychological difficulties (CDC, 2009).

Over 60% percent of North Americans, Europeans, and Africans with type II diabetes are obese. In Pima Indians and Pacific Islanders, the percentage of people with type II diabetes who are obese approaches100% (McPhee & Papakakis, 2012). Visceral obesity, which is the accumulation of fat in the abdomen in the omentum and mesentery, seems to have an increased relationship with insulin resistance and the development of Type II diabetes (McPhee & Papakakis). Type II diabetes has been a disease of adults but by 2005, was occurring in adolescents at the prevalence rate of more than 4.1 per 1000 (Daniels et al., 2005). It is not currently known if adolescents with Type II diabetes have the same level of risk for cardiovascular disease as adults. If these adolescents do have the same risk for cardiovascular disease, they may develop adverse cardiac events in their third and fourth decade of life or earlier (McPhee & Papakakis).

Epidemiologic relevance to population health outcomes

Americans are more sedentary than in previous generations. For example, in 1999, it was found that 43% of children ages 9 to 12 years and adults watch television or play video games more than two hours per day (U. S. Surgeon General, 2012). The way

communities are built influences the type and quantity of exercise. Schools and work are several miles away so many people drive or take public transportation to work or school instead of walking. Some neighborhoods make it difficult to walk because of safety issues. There may not be parks or recreation centers anywhere near poor neighborhoods and public transportation may not be available (Dietz, 2011).

Exercise enhances weight loss and assists in burning visceral fat but research has found less than 1/3 of all adults exercise the recommended 30 minutes most days (CDC, 2009). However, exercise does not always help an individual maintain a normal weight. For example, a study conducted in 2010 found that 39 percent of 175 women with BMI of 25 or higher exercised regularly (Smith, Fitzpatrick, & Griffin, 2011).

Literature Review

This section contains a comprehensive overview of literature related to childhood and adolescent obesity. Obesity has become epidemic in the United States and in the world, resulting in an abundance of information on obesity. Key words for this literature review include childhood, adolescent, obesity, body mass index, insulin resistance, sedentary, nutrition, exercise, and family. This review of the literature addresses the etiology, metabolic mechanism, critical periods, and nutritional causes of obesity. Additionally, the economic consequences, disparities, as well as intervention strategies are presented.

Etiology of obesity

Each person is a result of the complex mixture of genetics, behavior, environment, culture, emotion, and socioeconomic status (Dietz, 2011). Dietz observed people do not simply consume more calories than the body burns and decide to be

overweight. The etiology of obesity seems to be much more complex, influenced by a combination of metabolic, environmental, and societal influences (Dietz).

Metabolic mechanism of obesity. Adipose tissue, the stored fat from excess calorie intake, was traditionally thought to be a passive reservoir for energy storage. Beginning in 1987, researchers discovered adipose tissue is a major site for metabolism of sex steroids (Siiteri, 1987). The identification of leptin from adipose tissue in 1994 established it as part of the endocrine system. Kershaw and Flier (2004) present adipose secretes a variety of biopeptines called adipokines, which are active in the autocrine and endocrine systems. Adipose tissue has the metabolic mechanism to communicate with the central nervous system and is highly involved with coordination of neuroendocrine function, energy metabolism, and immune function. It is known to carry connective tissue matrix, nerve tissue, vascular, and immune cells (Kershaw & Flier, 2004).

This metabolic mechanism of adipose or fat tissue, has the ability to communicate with the central nervous system and is highly involved with coordination of neuroendocrine function, energy metabolism, and immune function, and is known to carry connective tissue matrix, nerve tissue, vascular, and immune cells (Kershaw & Flier, 2004). Excess adipose tissue in obesity, especially in the abdominal or visceral area, appears to produce an inflammatory state leading to insulin resistance, hyperglycemia, hyperlipidemia, and hypertension (Daniels et. al, 2005). Metabolic Syndrome, the name for a group of risk factors that raises the risk for heart disease and other health problems, occurs when an individual has three of the following risk factors: abdominal obesity more than 35 inches for women and 40 inches for men, high blood pressure over 130 systolic and 85 diastolic, fasting glucose of 110 or higher, triglycerides

over 150 mg/dL, and low high density lipoprotein (HDL) below 40 mg/dL (CDC, 2011). Metabolic Syndrome is believed to be caused by poor diet and insufficient exercise but researchers believe there may also be a genetic component (CDC, 2011).

Critical periods. When obesity is studied as a chronic disease, a pattern of several sensitive times in development of obesity emerges as having an enduring effect on adult obesity and the development of additional chronic disease (Daniels et al., 2005). Epidemiology studies of high birth weight and BMI later in life seem to have a positive correlation. Research has also shown a relationship between low birth weight and risk of central adipose which in turn is related to increased risk of cardiovascular disease (Daniels et al.). Rapid increases in infant weight during the first year of life seem to be related to childhood and adolescent obesity (Rolland-Cachera, Deheeger & Bellisle, 2002).

Nutritional causes. Dietary preferences of children and adolescents are the result of a combination of home environment, schools, communities, and advertising according to the Children's Food Environment State Indicator Report (CDC, 2011). Eating meals together as a family is associated with the development of healthy eating habits however as many as 39 percent of children ages 12 to 17 years of age do not eat meals most days of the week with their families (CDC). Meal planning can be a challenge for low income families when energy dense foods such as grains, sugars, and fats are usually the lowest cost option (Drewnowski & Specter, 2004). Foods eaten away from home usually have more calories and lower nutrition than food prepared at home (Healthy People 2020, 2011). Limited access to retail grocery stores or inversely, greater access to convenience stores has been associated with poor diets and increased risk of obesity (CDC, 2011).

Healthy eating during school can be challenging for children. In a study by Currie, Della Vigna, Moretti, and Pathania (2009), 9th grade children who attended school within one tenth of a mile from a fast food restaurant had at least a 5.2 percent increase in obesity. Many schools have prohibited the sale of sodas through vending machines but sugar sweetened drinks, including sodas, sports and fruit flavored drinks are the largest source of sugar in the diets of American children (CDC, 2011). On the average, adolescent males consume 300 calories daily from sugar drinks which contain little nutritional value (CDC).

A recommendation for a diet that supports weight loss is to consume a variety of nutrient-dense foods (Healthy People 2020, 2011). This includes whole grains, fruits, vegetables, low-fat or no fat milk, and lean meats and other protein sources like nuts. The recommendations include limiting the intake of saturated fats, added sugar and salt, and decreasing alcohol. Calorie intake should be below daily needs for metabolism to promote weight loss (Healthy People 2020). Modest weight loss of 5 to 10 percent has shown reductions in risk factors like elevated systolic blood pressure and insulin resistance (Kashyap, Louis, & Kirwan, 2011).

Economic Impact

The economic impact of obesity in the United States in 2000 was around $117 billion (U.S. Surgeon General, 2012). It is estimated that figure is now about $147 billion or about 10 percent of all medical spending (Finkelstein et al., 2009). For children and adolescents, the cost of hospitalization related to obesity between 1970 and 2000 rose from $35 million to $127 million. In 2006, it was found the cost of health care of obese people across all medical insurance plans was $1429 more annually than normal weight

people compared to $1145 difference in 1998 (Finkelstein et al.). In the same year, the cost of caring for obese Medicare recipients was the highest at $1723 more annually than their normal weight counterparts. This is compared to $1006 more than normal weight recipients in 1998 (Finkelstein et al.).

Obesity is a major cause of morbidity and mortality in the United States and yet coding and documentation of obesity in patients is often missing (Stephens, 2011,). Gastric bypass surgery in obese patients with other disease processes received approval for coverage by Medicare in 2005 (CMS, 2011). However, weight loss medications and nutritional therapy are often not reimbursed. Behavioral therapy and counseling regarding nutrition and exercise may be reimbursed by insurance carriers if the carrier deems the counseling was reasonable and effective, a case to be made by the provider's documentation and evaluation and management coding skills (CMS, 2011). People who elect more conservative, non-invasive methods than surgery to treat their obesity are often left to pay the cost of the care out of their own pocket rather than coverage through their insurance. Costs attributable to obesity are almost completely due to the cost of treating a condition caused from being obese (Finkelstein et al., 2009).

Obesity is a 140 billion dollar per year industry (Finkelstein et. al, 2009). Overweight and obese people and their pocketbooks are bombarded with the newest and greatest weight loss diet, weight loss book, pre-packaged foods, weight loss group memberships, gym memberships, exercise videos, diet pills, and protein powders. Overweight and obese people are likely to return to their pre-diet weight, unless they embrace healthy eating and exercise habits (Phelan, Roberts, Lang, & Wing, 2007).

Disparities

Most of the states with high prevalence of obesity are in the South, with the exception of Michigan (BRFSS, 2010). Mississippi has the highest rate of obesity at 34.5 percent. Obesity rates rose in Illinois, Kentucky, Massachusetts, Missouri, Rhode Island and Texas for the second year in a row. Colorado remains the only state with an obesity rate less than 20 percent (Levi, Katz, & Heller 2011). Higher prevalence for obesity in Blacks and Caucasians was found to be in the South and Midwest (CDC, 2009). The largest prevalence of obesity in Hispanics is seen in the Midwest at 29.6 percent, followed closely by the South and West at 29.2 and 29.0 percent respectively (CDC, 2009).

Results from BRFSS surveys conducted from 2006 to 2008 reveal Blacks had a 51 percent greater prevalence of obesity and Hispanics a 21 percent greater prevalence than Caucasians, which is consistent across the United States (BRFSS, 2010). Observing gender differences, Black women have the highest prevalence of obesity at 39.2 percent, followed by Black men at 31.6 percent, Hispanic women at 29.4 percent, and Hispanic men at 27.8 percent (CDC, 2009). More Caucasian men are obese (25.4 percent) when compared to Caucasian women (21.8 percent) (CDC, 2009). Black women's statistics are even more disturbing because 15% in the obese range have a BMI over 40, placing them in the extreme obese range (Kumanyika, 2005).

Montana had an estimated population of 998,199 in 2011 (U.S. Census Bureau, 2011). Eighty nine percent of residents are Caucasian. Black Americans make up 0.5 percent of the population, Asians 0.7 percent, and Hispanics 3.1 percent. American Indians at 6.4 percent of the population are the largest minority group in Montana (U.S.

Census Bureau, 2011). The percentages of American Indian/Alaska Natives over the age of 18 years who are considered obese are 39.6 compared to 26.1 percent Caucasians (CDC, 2010). American Indians/Alaska Natives are twice as likely to be diagnosed with diabetes and 1.8 times more likely to die of diabetes than their Caucasian counterparts (Barnes, Adams, Powell-Griner, 2010).

Factors Influencing Obesity

From the literature review, it is clear that addressing the health problem of obesity in the U.S. is a complex issue. The primary strategies that address the health problem of obesity are nutritional and physical activity. This pilot project only focused on physical activity and its impact on weight loss. This section provides an overview of the roles of families, schools, communities, and health care providers in exercise behaviors.

Role of Families

The family's influence on adolescent dietary and exercise habits is well established in the literature. According to evaluation of data obtained from the United States National Longitudinal Study of Adolescent Health, family environments negatively or positively influence adolescent weight well into young adulthood (Crossman, Sullivan, & Benin, 2006). In males and females, no matter what a family's economic status or race, having an obese parent increases the likelihood of being an overweight or obese adult (Crossman et al.). In females, higher educational status of parents, higher self-esteem, and knowing parents care about them reduces their risk for being overweight adults however, females who are African American or Native American have an increased risk of being an overweight or obese adult overall (Crossman, et al.).

A cross-sectional study of perceptions of parents of children age 5 to 12 years in Utah revealed some parents of obese children may have a distorted view of their child's weight (De La O et al., 2007). Parents were told to classify their child's weight based on a Likert-type scale ranging from extremely overweight to extremely underweight. Parents inaccurately estimated their child's weight as about right or even underweight 25% of the time. It was found that parents of boys are more likely to underestimate their child's weight (De La O et al., 2007).

In 2009, Warschburger and Kroller recruited 219 mothers of children ages 3 to 6 years. Socioeconomic factors and education of the mothers were recorded along with the mother's own height and weight. The mothers were asked to classify a set of silhouettes according to which they thought represented overweight children and then to select the silhouette which best represented the weight status of their child. Only 48.8% of the mothers could identify that silhouettes above the 90th percentile would increase health risks. When the mothers were asked to identify a silhouette that matched their own child, 78.9% of the mothers underestimated the weight of their child (Warschburger and Kroller, 2009).

Faith et al. (2012) evaluated research on behavioral change strategies that included high involvement by parents and other adult caregivers of obese children. The programs evaluated were multi-disciplinary in a university or hospital clinic setting. The researchers found the best outcomes were linked to certain strategies: identifying behaviors that should be changed, goal setting, monitoring progress, providing healthier food choices, praising progress, and using a written tracker (Faith et al, 2012).

West, Sanders, Cleghorn, and Davies (2009), studied the efficacy of lifestyle specific, 12 week, family based intervention in 104 Australian families who had at least one overweight child age 4 to 11 years of age. West et al. intervention utilized motivational interviewing and specific behavioral strategies including routine eating times, reading labels, reducing television and computer time, increasing energetic play, participating in sports, setting clear guidelines about food and activity, keeping track of behavior changes, and reinforcing healthy behavior and found a significant reduction in BMI in the children of the participating families. One child moved from the obese range to the healthy weight range, two children moved from the overweight range to the healthy weight range, and 11 children moved from obese range to the overweight range. During the follow up one year later, an additional 17% of the children had moved from the obese range to overweight or within normal weight ranges. In a post participation survey, 95% of participating parents rated the quality of the intervention as good to excellent and felt the intervention met both their child's and their own needs (West et al., 2010).

Role of Schools

Recommendations by the CDC aim to require moderate to vigorous physical activity during physical education classes for at least half the time students spend in class and give students opportunities to participate in extracurricular activities (Khan et al., 2009). Schools can purchase playground kits and provide supervised recess at school to encourage children to go outside and recreate safely (Leadership for Healthy Communities, 2011). The CDC recommends children in daycare spend less time watching television and using computers (Khan et al.).

Declining levels of physical activity among adolescents during the latter half of the twentieth century have led to the proposal of school based activity programs as the solution. In a five year study by Wardle, Brodersen, and Boniface (2007) no significant difference was found in BMI or waist measurements among girls ages 11 to 12 years from 34 secondary schools in England who participated in physical education one, two, or three times per week. Higher levels of school physical education (three times per week) were associated with lower gains in adiposity in boys but there were no significant changes in BMI (Wardle, Brodersen, and Boniface, 2007).

Schetzina et al. (2009) conducted several focus groups with teachers, parents, and 4th grade students in 2005 in a rural elementary school in northeastern Tennessee where approximately 52% of the students were economically disadvantaged with 17.6% of these living below the poverty level. Trained moderators used open-ended questions to facilitate discussion in the groups regarding their perceptions of school policy and the role of the school in nutrition, physical activity, and presentation of obesity (Schetzina et al.). All of the groups indicated they believe schools should provide healthier food choices at school and more opportunities for physical activity. Parents expressed concern their children were not getting enough to eat at school and they and the teachers were not in favor of BMI screening at school. Students stated they were aware of healthy choices in the cafeteria but admitted choosing unhealthy food options. Parents and children both were in favor of increasing physical education time and recess during school (Schetzina et al.).

Role of communities

The community where a family resides is important in increasing exercise. King et al. (2006) found people who lived in an attractive neighborhood were more likely to achieve exercise recommendation. Pedestrian safety in traffic safety is important to all ages, but especially for children and elderly. King et al. reported neighborhoods need to be free of stray dogs and nearby shopping is desirable (CDC, 2011). Unfortunately, most suburbs have been designed for car travel, not for walking or exercise. Garage doors usually face the street and there is an absence of trees and sidewalks (King et al.). Urban planners are beginning to incorporate these factors into city planning to make city streets more attractive and safe for pedestrians and bikers (King et al.).

Role of Health Care Providers

Providers in primary care are on the front line for treatment of overweight and obese individuals regardless of age. Current non-surgical treatments for obesity include dietary advice, physical activity, behavior modification, pharmacotherapy, and commercial weight loss programs (Lloyd & Khan, 2011). One of the Healthy People 2020 objectives includes increasing the percentage of office visits to include diet education and counseling for obese adults, children, and adolescents (Healthy People 2020, 2011). The percentage of physicians who included diet and nutrition counseling in their office visits in 2007 was 12.2 for all age groups. The target is 15.2 percent for all age groups (Healthy People 2020). Educational materials for diet counseling can be found on various websites in printer friendly format. Diet diaries are also available on the web. Some of the major pharmaceutical companies provide nutrition pamphlets but the provider needs to be familiar with the resource. Providers often know the

recommendations for treating obesity are a nutrition rich diet that is low in saturated fat, but the percentages and where to go from there can be confusing. Diet counseling takes time in the clinic setting and reimbursement for these services is inadequate. In addition, provider education has not been shown to be adequate to change dietary habits and behaviors (CDC, 2011). Traditional advice about weight loss and diet has only been effective in about 5 to 10 percent of cases and according to the National Task Force on Community Preventative Services, there is insufficient evidence that provider education, provider feedback, provider reminders, and multi component provider interventions make any impact in patient obesity and climbing obesity prevalence (Pignone, Ammerman, Fernandez, Orleans, Pender, Woolf, Lohr, & Sutton, 2003).

In 2010, Courtney and Dickson completed a descriptive, cross-sectional study of the management practices of a random sampling of nurse practitioners across the nation in regard to counseling overweight and obese patients. Courtney and Dickson found 87 percent of the nurse practitioners felt they were competent to advise obese patients and 85 percent felt they had adequate counseling skills. Major barriers nurse practitioners reported in initiation of obesity management included lack of time for counseling and poor reimbursement for services. Patient's lack of motivation was the greatest barrier patients had to overcome according to the nurse practitioners in the survey (Courtney & Dickson). Sixty-three percent of nurse practitioners surveyed reported they sometimes, frequently, or always referred their patients to a dietitian, 51 percent referred patients to a weight-loss program (Courtney & Dickson). Approximately seventy-five percent of the respondents reported that they never or rarely referred their patients to exercise trainers

and almost all of the nurse practitioners surveyed recommended exercise for at least 30 minutes most days (Courtney & Dickson).

The use of pedometers, according to research, has been successful in increasing physical activity among participants (Bravata, et al., 2007). Participants who used a pedometer in a 2007 study increased their physical activity by 2491 steps more than the group who did not use pedometers (Bravata et al., 2007). Pedometer users in this study decreased their BMI by 0.38. An important predictor of increased physical activity was to have a step goal such as 10,000 steps per day (Bravata et al.).

BMI calculators are available free on the web and can be used at each patient encounter if the provider has an internet connection. Healthy People 2020 include recommendations to increase the percentage of providers who regularly measure BMI on their adult, children, and adolescent patients by 10 percent. Currently providers regularly measure 48.7% of their patient's BMI and recommendation is to increase to 49.7%. BMI calculations can be accomplished quickly and accurately using online calculators (National Heart, Lung, and Blood Institute (NHLBI), 2012).

Final Evidence of Project Completion

Implementation of the project was completed at the end of December, 2012. The following section presents the project design and the results of the project

Project Design

This project was designed to pilot an exercise program that would impact adolescents with obesity in a nurse practitioner practice in a rural state by: (a) implementing an exercise program, (b) providing weekly support and monitoring of the program, and (c)

evaluating weekly progress toward increasing physical activity in a group of adolescents and one of their parents or guardian.

This pilot project pursued the answer to the following questions:

1. Can involvement of a parent or guardian in an exercise program motivate an adolescent and their parent or guardian to be more active?
2. Will tracking steps using a pedometer increase adherence to an exercise program?
3. Will tracking physical activity increase the number of times a parent or guardian and adolescent exercise per week?
4. Will participation in an eight week exercise program result in any reduction in weight or BMI in parent or guardian?
5. Will participation in an eight week exercise program result in any reduction in weight or BMI in an adolescent?

Setting and Sample

The setting for this project was a nurse practitioner managed family health care clinic that serves the community of Great Falls, Montana. Families across the lifespan receive health care services which include well-care, acute illness care, and chronic disease management. The majority of patients served are Caucasian but there are Native American Indian and Hispanic patients as well. The health care clinic also serves a population of Hutterites, an Anabaptist religious and agricultural group, from several colonies in the central Montana area (Stahl, 2003) along with military families from Malmstrom Air Force Base, Montana Air National Guard, and Army National Guard. Most of the patients are insured, about 40% Medicaid, 20% Medicare, 30% private insurance and 20 % private pay. Participants were a (a) convenience sample of

adolescents age 10 to 19 years old and (b) a parent or guardian who desired to participate in the exercise program. Participants were cleared for participation by their health care provider. All of the recruited participants were found to healthy enough for physical activity.

Protection of Human Subjects

Permission to implement the pilot project was obtained from the nurse practitioner owner of the Missouri River Healthcare. Approval to implement this project was obtained from Montana State University February 15, 2012 and from the University of Missouri at St. Louis Institutional Review Boards May 16, 2012. Informed consent was obtained from each parent or guardian and from each adolescent child (see Appendix A and B). Participants received no monetary compensation and could withdraw from the project at any time without any penalty. Participants were given possible risks of participation in this project and encouraged to contact their health care provider in the event any adverse effects developed. All participants had written permission of their health care provider to participate in the program. Participation in the program was voluntary and some participants did drop out of the program.

Instruments for Data Collection

Instruments for data collection included the Move Montana Habits and Interest Survey, Move Montana Habits and Interest Survey for Youth, Move Montana activity log, minutes to miles activity converter chart, BMI calculator, medical grade digital weight scale, height stadiometer, and pedometer. Following is a description of the instruments:

Move Montana Habits and Interest Survey. The survey consisted of multiple choice and yes/no questions about exercise habits, an open ended question about prior participation in a walking program, and age and gender (see appendix C). The pre-participation surveys were based on the Employee Habits and Interest Survey developed by the CDC and available on the Healthier Worksite Initiative website (Healthier Worksite Initiative, CDC, 2011). The original survey on the website is designed to be given before initiating a wellness program at a worksite.

Move Montana Habits and Interest Survey for Youth. This survey was modified by the investigator for 5th grade reading level from the Employee Habits and Interest Survey using the readability converter found at http://www.standards-schmandards.com/exhibits/rix/. The survey consisted of multiple choice and yes/no questions about exercise habits, an open ended question about prior participation in a walking program, and age and gender (see Appendix D).

Move Montana activity log. This activity log was adapted from the activity and nutrition tracking form available to the public on the Presidential Active Lifestyle Award (PALA) site (PALA, 2011) (see Appendix E). The activity log had an area to record the week of the program and day of the week, a column to record the amount of daily activity in minutes or miles and a column to record daily steps counted by the pedometer.

Minutes to miles activity converter chart. The minutes to miles activity converter chart was adapted from the CDC (www.cdc.gov/nccdphp/dnpa/physicl/measuring/) and Walk Georgia (www.walkgeorgia.org) (Appendix F).

BMI calculator. The calculator used was located on the National Heart, Lung, and Blood Institute (NHLBI) website (www.nhlbisupport.com/bmi). The BMI calculator was used to calculate pre and post-participation BMI.

Medical grade digital scale. The medical grade scale was used to measure pre and post participation weight.

Height stadiometer. The stadiometer was used to measure height. Height and weight tables from the NHLBI were used as well as standard growth charts for girls and boys ages 10 to 19 years.

Pedometer. The pedometer selected for this investigation was the SM2000, a simple spring levered model obtained from Pedometers USA online at http://www.pedometersusa.com/sm2000.html. The pedometer measures 1 inch by 1.375 inches, comes in assorted colors, and has a protective cover. It is powered by a 1.5V DC battery, records steps up to 99,999 steps with 92 to 94 % accuracy according to the distributor, and is manufactured in Korea. Pedometers were selected for ease of use, cost effectiveness, and suitability in a walking program. Steps on this model of pedometer are easily cleared by pressing one button. The pedometer comes with a belt clip and safety leash in the event the pedometer slips off the waistband.

Results

A convenience sampling of 16 adults and 13 adolescents signed consent forms for this pilot project (N = 29). From this convenient sample, 11 adults and nine adolescents returned surveys (N = 20). One adult dropped the program resulting in 10 adults and eight adolescents exercised through the entire eight weeks (N = 18). Risks to parents and adolescents during exercise periods were minimal and no participants reported any difficulties while exercising. Descriptive and inferential statistics were used to answer the following research questions:

Research Question 1. Can involvement of a parent or guardian in an exercise program motivate an adolescent and their parent or guardian to be more active?

Five of 10 adults (50%) and four of eight adolescents (50%) reported they did not exercise regularly before the exercise program ("I don't exercise or walk daily" or "I am thinking about beginning an exercise or walking program"). Adolescents who did not exercise at the beginning of the exercise program had a corresponding parent who did not exercise. All of the adults and adolescents who did not exercise prior to the program reported they exercised at least three times per week during the eight weeks. In all cases of parent and adolescent pairs who exercised, the number of times the adolescent exercised per week was at least equal to, and in some cases more than the amount of exercise of their parent completed during each week. In parents and their adolescent who reported they exercised one to three times per week, both the parent and adolescent increased their exercise frequency to four times or more per week. Ten of the 18 participants (56%), six parents and four adolescents, reported increased frequency of exercise each week throughout the eight week period.

Research Question 2. Will tracking steps using a pedometer increase adherence to an exercise program?

Among the nine participants who reported they did not exercise regularly before the exercise program, two adults and no adolescent used a pedometer during the eight weeks. Among the 11 participants who exercised the most (5 to 7 times per week) during the eight week period, one adult and one adolescent used a pedometer. Of the participants who exercised for the eight week study period, four of 18 (22%) used a pedometer (three adults and one adolescent).

Research Question 3. Will tracking physical activity increase the number of times a parent (or guardian) and adolescent exercise per week?

Before beginning the exercise program, nine of the 18 (50%) survey respondents were thinking about exercising but did not exercise regularly. Seven participants (four adults and three adolescents) reported they increased their activity to at least three times per week during the eight week period, three of these increasing their exercise to at least five times per week. One parent and their adolescent who exercised one to three times per week prior to the exercise program increased their frequency to three to five times per week during the eight weeks. Five adults and four adolescents (50% of 18) who exercised four or more times per week before the eight weeks reported exercising five or more times per week during the eight week exercise program.

Research Question 4. Will participation in an eight week exercise program result in any reduction in weight or BMI in parent or guardian?

Six (60%) of the 10 adults who completed the exercise program had a reduction in weight, four adults (40%) weight did not change, and none (0%) gained weight (See Table 1). The pre-participation minimum weight was 123 lbs (55.9 kg), maximum 276 lbs (125.5 kg), and a mean weight of 197 lbs (89.5 kg). After the eight week program, the minimum and maximum weight stayed the same but the mean weight had decreased to 189.3 lbs (86 kg). The largest weight loss over the eight weeks was 11 lbs (5 kg), the least 2 lbs (0.9 kg), mean weight loss of 4.1 lbs (1.9 kg), and total weight loss 41 lbs (18.6 kg) for the group.

Table 1. Adults Gender, Age, Start/End Weight, Loss/Gain, Start/End/Change BMI

Gender	Age	Start Weight Lbs/(kg)	End Weight Lbs/(kg)	Loss/gain Lbs/(kg)	Start BMI	End BMI	Change BMI
Female	33	123/(55.9)	123/(55.9)	0	19.90	19.90	0
Female	42	142/(64.5)	142(64.5)	0	22.90	22.90	0
Male	33	157/(71.2)	157/(71.2)	0	24.60	24.60	0
Female	52	165/(75)	162/(73.6)	-3/(-1.4)	23.00	22.60	-0.40
Female	38	195/(88.6)	186/(84.5)	-9/(-4.1)	32.40	30.90	-1.50
Female	26	199/(90.5)	191/(86.8)	-8/(-3.6)	38.90	37.30	-1.60
Female	45	206/(93.6)	198/(90)	-8/(-3.6)	33.20	32.00	-0.80
Male	56	206/(93.6)	204/(92.7)	-2/(-0.9)	32.30	31.90	-0.40
Female	56	265/(120.45)	254/(115.5)	-11/(-5)	45.50	43.60	-1.90
Female	42	276/(125.5)	276/(125.5)	0	44.50	44.50	0

When initial BMIs were calculated six (60%) adults were obese, none (0%) were overweight, and four (40%) were normal. Over the eight week exercise program four adults (40%) BMI remained unchanged, six (60%) were lowered, and none (0%) increased (See Table 1). Pre exercise program, adult BMI range was 25.6, minimum 19.9, maximum 45.5, and mean 31.72. After eight weeks, BMI range was still 25.6, minimum 19.9, maximum 45.5, and but the mean had dropped to 31.02. Using the Wilcoxon Signed Rank Test, the BMI and weight loss of adult participants pre and post exercise was significant ($\underline{Z} = 0.027$, $P < .05$).

Research Question 5. Will participation in an eight week exercise program result in any reduction in weight or BMI in an adolescent?

Pre-exercise program participant minimum weight was 50 lbs (22.7 kg), maximum was 230 lbs (104.5 kg) with a mean weight of 147.6 lbs (67 kg). At the end of the eight week exercise program, minimum adolescent weight was 52 lbs (23.6 kg), maximum was 223 lbs (101.4 kg), and the mean had dropped to 144.75 lbs (65.8 kg). Over the eight weeks, one (12.5%) adolescent weight did not change, five (62.5) lost weight, and two (25%) gained weight (See Table 2). One adolescent lost 2 lbs (0.9 kg), one lost 5 lbs (2.3 kg), and three adolescents lost 7 lbs (3.2 kg). Total weight loss for the five adolescents who lost weight was 28 lbs (12.7 kg). However, nonparametric testing using the Wilcoxon Signed Rank Test showed no significance in weight loss $\underline{Z}$ =.105 using significance level < P 0.05.

When initial BMIs were calculated, two (25%) of adolescents were obese, four (50%) were overweight, one (12.5%) was underweight, and one (12.5%) was normal (See Table 2). Over the eight week exercise program, one adolescent BMI remained unchanged, six had a reduction, and one increased (See Table 2). Nonparametric testing using the Wilcoxon Signed Rank Test showed a significance level of 0.397. Neither the weight loss nor BMI decrease in the adolescent group was shown to be statistically significant. However, when combined with the adult data, nonparametric testing on all participant's weight loss using Wilcoxon Signed Rank Test showed a significance level of $\underline{Z}$ = 0.041 for weight loss and significance level $\underline{Z}$ =0.028 for BMI decrease from pre- to post-exercise program.

Table 2. Adolescent Gender, Age, Start/End Weight, Loss/Gain, Start/End/Change BMI

Gender	Age	Start Weight Lbs/(kg)	End Weight Lbs/(kg)	Loss/gain Lbs/(kg)	Start BMI	End BMI	Change in BMI
Male	10	50.00	52.00	+2/(+0.9)	15.30	15.20	-0.10
Female	11	110.00	113.00	+3/(+1.4)	25.60	26.30	+0.7
Female	12	140.00	140.00	0	28.80	28.80	0
Male	14	160.00	155.00	-5/(-2.3)	31.20	30.30	-0.9
Female	15	172.00	165.00	-7/(-3.2)	27.80	26.60	-1.2
Male	16	187.00	185.00	-2/(-0.9)	27.90	27.40	-0.5
Male	16	230.00	223.00	-7/(-3.2)	35.00	33.90	-1.10
Female	18	132.00	125.00	-7(-3.2)	23.40	22.20	-1.20

Discussion of Results

A total of 16 adults and 13 adolescents were recruited to participate in this pilot exercise program. After informed consent, all participants were weighed and BMI calculated. Each participant was given a packet with the following materials: pre-participation survey, Move Montana activity log, and pedometer. Of the 29 recruits, nine (31%) did not complete the survey or participate in the exercise program. Several phone calls were made to encourage recruits to complete and return surveys. One parent and adolescent completed the survey but did not complete eight weeks of exercise. Survey response rate for this pilot project was 72%. Survey response rates of 50% are reported to be adequate for analysis, 60% to 70% is good return rate, and with a highly motivated

population, a response rate of 85% may be attained (American Association for Public Opinion Research, 2011; Dillman & Carley-Baxter, 2000; Gallop Europe, 2007).

Baseline weight for the 18 participants who completed the eight week program ranged from 50 lbs (22.7 kg) for an adolescent to an adult who weighed 276 lbs (125.5 kg). Average weight loss over the eight weeks for adult and adolescent participants was 3.8 lbs (1.7 kg), total weight loss 69 lbs (31.4 kg). The largest weight loss among the participants was 11 lbs (5 kg) and the least was 2 lbs (0.9 kg). Two adolescents gained weight over the eight week exercise program. Four adults maintained but no adults gained weight. The average weight loss is comparable to clinical trials which report average weight loss of 1 lbs, 2 oz to 16 lbs, 12 oz (0.5 to 7.6 kg) for participants in exercise programs (Dachs, 2007).

Of the 18 participants who completed the eight week exercise program, 12 (67%) of BMI's were in the overweight range and 8 (44%) were in the obese range before the exercise program. Six of 10 adults (60%) BMIs were in the obese range; two of eight adolescents (25%) were in the overweight range and four of eight adolescents (50%) in the obese range. This study sample of both adults and adolescents was higher than the 2012 Health of Cascade County Report which estimated residents in this county had a 40% rate of overweight and 23% rate of obesity (Cascade County Community Health Assessment, 2012). After the eight week exercise program, BMI in all the groups declined slightly. BMI decreases were greater in the more obese participants. This is consistent with Faith et al. (2009), Khan et al. (2009), and West, Sanders, Cleghorn, and Davies (2009) who reported that exercise can cause a decrease in BMI.

Pedometer use was low through the group of participants even though they were given pedometers as part of the participation packet. A total of four participants used a pedometer, three adults and one adolescent (22%). One of the participants who routinely exercised reported use of a pedometer before the exercises program. Pedometer use according to the literature can increase activity as much as 26.9% over baseline when compared to non-pedometer users (Bravata et al., 2007).

Nine participants (4 adults and 5 adolescents) (31%) of the 29 recruits did not complete the survey or exercise program. Of the parents and adolescents not completing the survey and exercise program, all were members of single parent homes; seven (78%) were in the BMI obese range of 30 or greater. This is consistent with researchers who reported that children and adolescents in single parent homes are more likely to be significantly overweight than their counterparts who live in dual parent homes (Huffman, Kanikireddy, & Patel, 2010; Parks, Kumanyika, Moore, Stettler, Wrotniak, & Kazak, 2012, Turchi & Noonan, 2012). All of the recruits who did not complete the survey or exercise program were low income. Three of the parents and five of the adolescents were Medicaid recipients, two parents had no insurance. Previous investigators have found children and adolescents on Medicaid are almost six times more likely to be obese than children or adolescents covered by private insurance (Kumanyika, 2005; Parks, Kumanyika, Moore, Stettler, Wrotniak, & Kazak, 2012; Thompson Medstat, 2006; Turchi & Noonan, 2012).

Implications for Practice

Counseling patients regarding preventative health care and disease prevention is an essential part of primary health care. The time needed to counsel families and their

children to exercise regularly and make healthy food choices can add to an already demanding clinic schedule. Time needed to counsel and teach patients the importance of exercise and starting an exercise program is approximately five minutes. Staff could be trained to assist with education of patients, fielding questions, and monitoring their weight and BMI. Although initiating an exercise program with parents and adolescents takes time in a primary care practice, the physical and mental health benefits of increasing physical activity and maintaining a healthy weight has been well established in research literature (Gordon-Larsen, McMurray, & Popkin, 2000; Kashyap, Louis, & Kirwan, 2011; Phelan, Roberts, Lang, & Wing, 2007). Exercise is essentially free, limited only by making it a priority every day. The cost to benefit ratio makes discussing increasing exercise essential patient teaching at every visit, especially for low income patients.

Adolescents and Families

Parents and guardians deal with many stressors which include childrearing, children with health issues, unemployment, education, aging parents, financial constraints, no health insurance, prejudices, and leading a single-parent household (Assistant Secretary for Planning and Evaluation (ASPE), 2012; Parks, Kumanyika, Moore, Stettler, Wrotniak, & Kazak, 2012). Of the stressors listed, single-parent family has the strongest relationship to childhood obesity (Turchi & Noonan, 2012; Parks et al.). Caucasian adolescents from families with lower socioeconomic status have been found to be less physically active than Caucasian adolescents from families with higher incomes (Gordon-Larsen, McMurray, & Popkin, 2000; Parks et al.). Black, Latino, and Native American adolescents are more likely to be overweight despite their socioeconomic status (ASPE, 2012; Parks et al.). One of the biggest challenges may be convincing busy

families of the importance of increasing exercise for their children and themselves to combat the growing problem of obesity in our state and nation. The benefit of exercise to the family as a whole includes quality time with children, modeling a healthy lifestyle, and building a foundation for lifelong physical activity that will reduce disease and physical disability as adults age (Crossman, Sullivan, & Benin, 2006; Kashyap, Louis, & Kirwan, 2011; West, Sanders, Cleghorn, and Davies, 2009). Families should be counseled to exercise together at every well child visit and sports physical. Fitness goals should become a part of health promotion, whether using miles or increasing daily steps using a pedometer (Faith et al, 2012; West, Sanders, Cleghorn, and Davies, 2009). Incentives for families to join local health clubs, participation in community activities, fun runs and walks, and opportunities for family based activities could be advertised and supported by the clinic.

Advanced Practice Nursing

Advance practice nurses in primary care are at the forefront of preventative care. The results of this study as well as a review of the current literature support the importance of involving both parents and their children in an exercise program. Adolescents from lower income and single parent families are at greater risk of developing obesity but also may be more difficult to treat (Parks et al., 2012; Turchi and Noonan, 2012). A recent community assessment reports low income communities have issues with fewer sidewalks, decreased access to parks and recreational facilities, and are perceived as unsafe due to crime or traffic (Cascade County Community Health Assessment, 2012). Advanced practice nurses will have to be creative counseling socioeconomically challenged and single parent families to increase their exercise,

providing support and tools such as lists of activities and exercises that can be accomplished at home, in safe walking areas, on bicycle trails, at nearby parks, in community centers, and by attending free organized community programs for the family. Exercise needs to be integrated into family routines and become a priority for the entire family to be successful. Exercise can be woven into television watching during commercials and by walking to school programs, parking further from shopping or playing at the park. Advance practice nurses should motivate parents and their adolescents to limit television time and video games to 2 hours or less a day.

Plans for Dissemination

This project was implemented in a nurse practitioner owned clinic in central Montana. Results from this project will be shared with the other providers in the clinic which includes two nurses, three nurse practitioners, one physician, and one licensed professional counselor. Posters advertising the exercise program and post-cards are already in place at the clinic. A short presentation of the program will be given to the nurses and providers at a luncheon. Providers will be given the materials to recruit additional participants who are healthy enough to exercise. Nurses will be instructed to obtain a baseline weight and height in all consenting patients. Patients will be given information regarding the benefits of increasing activity and encouraged to track their weekly activities to report back to the providers and nurses. The clinic will advertise the program to the general public on the website and via public service television announcements.

In addition, results will be shared with the college of nursing, presented at Montana Nurses Association annual convention, and at the American Academy of Nurse

Practitioners national convention. An exercise program plan is in progress at the college of nursing which has recruited nursing students and faculty to participate in a 12 week exercise program. All participants' exercise will be recorded as miles and tracked on a map of Montana for visual impact. If successful, the program will be offered every spring and include all of the Montana State University extended campuses in the challenge to increase exercise frequency. An exercise program for school aged children is in the planning stage at the local Heisey Youth Center which includes an exercise activity and nutritional counseling two times per week after school based on the CATCH (Coordinated Approach to Child Health) program (CATCH, 2013). The plan includes expansion of the program into the summer to create a camp for school aged children.

Influence on Doctorate of Nursing Practice

The doctor of nursing practice provides the opportunity to apply evidence from research and literature to solve complex clinical problems and improve patient care and outcomes. The experience of the clinical scholarship project provided this doctoral student the opportunity to design and implement a family centered pilot exercise program for a group of adolescents and their parents. Current literature was reviewed for successful obesity programs including exercise, nutritional counseling, dietary treatment, family influences, and the use of pedometers. The pilot program was modeled after other exercise programs used in communities to motivate participants to increase their activity.

This study was limited by a small sample size. Further studies with larger samples sizes, possibly including parents and adolescents from schools in the local city and county, local churches, and community centers would provide further information regarding the effectiveness of family centered programs for obesity. Exercise programs

aimed at supporting single-parent families with obese adolescents and parents would be of further interest. In addition, creating and evaluating an exercise program plan including nutritional counseling and dietary interventions would be beneficial.

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Appendix

A. Subject Consent Form for Participation in Human Research (Adult version)
B. Subject Consent Form for Participation in Human Research (Youth version)
C. Move Montana Habits and Interest Survey (Adult)
D. Move Montana Habits and Interest Survey (Youth)
E. Move Montana Activity Log
F. Minutes to Miles Activity Converter Chart

SUBJECT CONSENT FORM

FOR

PARTICIPATION IN HUMAN RESEARCH AT

MONTANA STATE UNIVERSITY

Project Title: Move Montana

You are being asked to participate in a pilot study to increase physical activity in children/adolescents and their families to see if increasing activity as a family can help children and adolescents reduce their weight. If you agree to participate you will be asked to answer a short survey regarding your current activity level. You can choose to not answer any questions you do not want to answer and/or you can stop at anytime.

Before beginning the project, all participants will be weighed and height measured to calculate body mass index (BMI). Then each participant will be asked to exercise at least 30 minutes 5 times per week for eight weeks. Participation in exercise as a family is encouraged. Each participant will track their exercise on a "passport" tool. Total distance walked or equivalent exercise will be tallied each week and totaled at the end of 8 weeks. Remember to exercise at your own pace. Again, participation is voluntary and you can choose to stop at anytime.

If you are not in good physical condition, you may experience shortness of breath or chest pain with exercise. Be sure to consult your health care provider to see if you are healthy enough to exercise. There may be no benefit to you in this project but possible benefits of participation in regular exercise from this project may be increased energy and stamina, and small weight loss. This project is currently not funded and there is no cost to participate

In the event your participation in this research results in injury to you, medical treatment consisting of referral to your primary care provider or a health care provider in your area will be available. Further information about this treatment may be obtained by calling Deanna Babb, (406)788-0730.

If you have questions about the research, you can contact Deanna Babb, (406)788-0730 or dbabb@montana.edu. If you have additional questions about the rights of human subjects you can contact the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 [mquinn@montana.edu]

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AUTHORIZATION TO SHARE PERSONAL HEALTH INFORMATION IN RESEARCH

We are asking you to take part in the research described in the attached consent form. To do this research, we need to collect health information that identifies you. We may collect the results of tests, questionnaires and interviews. We may also collect information from your medical record. We will only collect information that is needed for the research. This information is described in the attached consent form. For you to be in this research, we need your permission to collect and share this information.

We will share your health information with people at the hospital who help with the research. We may share your information with other researchers outside of the hospital. We may also share your information with people outside of the hospital who are in charge of the research, pay for or work with us on the research. Some of these people make sure we do the research properly. The "confidentiality" section of the consent form says who these people are. Some of these people may share your health information with someone else. If they do, the same laws that the hospital must obey may not protect your health information.

If you sign this form, we will collect your health information until the end of the research. We may collect some information from your medical records even after your direct participation in the research project ends. We will keep all the information forever, in case we need to look at it again. We will protect the information and keep it confidential.

Your information may also be useful for other studies. We can only use your information again if the Institutional Review Board gives us permission. This committee may ask us to talk to you again before doing the research. But the committee may also let us do the research without talking to you again if we keep your health information private.

If you sign this form, you are giving us permission to collect, use and share your health information. You do not need to sign this form. If you decide not to sign this form, you cannot be in the research study. You need to sign this form and the attached consent form if you want to be in the research study. We cannot do the research if we cannot collect, use and share your health information.

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Adult:

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this study. I, _____ *(name of subject),* agree to participate in this research. I understand that I may later refuse to participate, and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _____

Witness: _____ (optional)

Investigator: _____

Date: _____

SUBJECT CONSENT FORM

FOR

PARTICIPATION IN HUMAN RESEARCH AT

MONTANA STATE UNIVERSITY

Youth

Project Name: Move Montana

I am asking for your help to see how I can help kids and their parents exercise more and lose weight. It does not cost any money to help with this project.

If you would like to help:

1. Tell me how much you exercise now.
2. Write down how tall you are and what you weigh.
3. Exercise 5 times each week for 30 minutes or more (walk, hike, bike, swim, dance, skate, ski, basketball, golf, or jump rope).
4. Write down when you exercise and how long.
5. Exercise at your own speed. You can stop at anytime.
6. Be sure to let your parents know if your chest hurts when you exercise.

Minutes to Miles

To make this more fun, you can pretend you are walking across Montana. The time you spend doing an exercise can be changed into miles. Keep track of the miles your walk over 12 weeks to meet your goal. Be sure to ask your family to exercise with you.

Example:

Jump rope 8 minutes= walking 1 mile

**A list of exercises and "minutes to miles" is the paperwork.*

If you are hurt exercising, be sure to ask your parent/s to talk to your doctor. If you want to know more, you can call Deanna Babb at (406)788-0730 or email projectdirector@movemontana.vpweb.com.

If you want to know more you can also call the Chair of the Institutional Review Board, Mark Quinn, (406) 994-4707 [mquinn@montana.edu]

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Children and Adolescents:

AUTHORIZATION: I have read the above and understand the discomforts, inconveniences and risks of this study. I, _____ *(name of parent or guardian),* related to the subject as _____ *relationship,* agree to the participation of _____ *(name of subject)* in this research. I understand that the subject or I may later refuse participation in this research and that the subject, through his/her own action or mine, may withdraw from the research at any time. I have received a copy of this consent form for my own records.

Parent or Guardian Signature: _____

Child's Assent Signature: _____ (if applicable)

Witness: _____ (optional)

Investigator: _____

Date: _____

Move Montana

Habits and Interest Survey

Participation is voluntary, and you can choose to not answer any question that you do not want to answer, and you can stop at any time.

Age_____

I am ____Male ____Female

Activity Questions

1. Current physical activity level
    a. I don't exercise or walk daily.
    b. I am thinking about beginning an exercise or walking program.
    c. I exercise or walk one to three times per week.
    d. I exercise or walk 30 minutes a day on four or more days a week.
2. When do you get most of your exercise?
    a. Before school or work
    b. During school or work hours including break and lunch times
    c. After school or work
    d. I am only active on weekends
    e. None of the above. I am not physically active
3. I enjoy exercise or physical activity.
    a. Strongly agree
    b. Agree
    c. Disagree
    d. Strongly disagree
    e. Neither agree or disagree
4. My overall health is:
    a. Excellent
    b. Good
    c. Fair
    d. Poor
5. I am currently using a pedometer.
    ____yes ____no
6. I have participated in a walking program in the last year.
    ____yes ____no
        If yes please describe_____

Thank you for your time!

Move Montana

Habits and Interest Survey for Youth

You are being asked to answer some questions before you start exercising. You don't have to answer any question that you do not want to answer, and you can stop at anytime. There is no right or wrong answer.

Age_____

I am ____Boy ____Girl

Questions

1. How much exercise you do now.
    a. I don't exercise or walk.
    b. I want to start to exercise or walk.
    c. I exercise or walk one to three times a week.
    d. I exercise or walk 30 minutes a day on four or more days a week.
2. When do you get most of your exercise?
    a. Before school or work
    b. During school and lunch times
    c. After school or work
    d. I am only active on weekends
    e. None of the above. I don't exercise.
3. I like exercising.
    a. Yes, very much
    b. Yes
    c. No
    d. I hate it
    e. Not yes, not no
4. My health is:
    a. The best it can be
    b. Good
    c. Ok, I have some problems
    d. Poor, I don't feel good
5. I use a pedometer to measure my steps.
    ____yes ____no
6. I have been in an exercise or walking program in the last year.
    ____yes ____no
        If yes please tell about it_____

Thank you for your time!

Minutes to Miles Activity Conversion Chart

You can use the following chart to convert any activity into "miles". If your activity is not listed below, use your best judgment to select a similar activity and number of miles.

Activity Level	Samples Activities	Energy Conversion
Light Activity (less than 3.5 kcal per minute) Can easily talk and even sing during activity	Gardening, bowling, snowmobiling, painting, car washing, fishing, window cleaning, golf (without cart), slow treading in pool, dusting, or vacuuming	20 minutes of activity = 1 mile
Moderate Activity (3-7 kcal per minute) Can talk but not sing during activity	Softball, weightlifting, shoveling snow, dancing, barn cleaning, racquetball, tennis, volleyball, skiing easy, handball, hiking, yoga, ice skating recreational, swimming recreational, competitive table tennis	20 minutes of activity = 2 miles
Vigorous Activity (7.5 + kcal per minute) Not able to say more than a few words without pausing for a breath	Exercise classes: i.e. (spinning, step, kickboxing, body pump, circuit training.) basketball, soccer, cross country skiing, hard mogul skiing, martial arts, boxing sparring, chopping wood, swimming fast laps, competitive dancing	25 minutes of activity = 3 miles

Activity	**Minutes per "walked miles"**
Running	report actual miles
Walking	report actual miles
Biking	11
Active stretching	27
Aerobics	12
Badminton	13
Canoeing/kayaking	12
Elliptical trainer	8
Exercise ball	24
Football	7
Frisbee/catch	29
Hiking	12
Hiking with load	9

Horseback riding	15
Hunting	12
Jump rope	8
Martial arts	6
Mowing, push	11

Examples:

1. A basketball game lasted for 1 hour but you only played 25 total minutes, you would record 3 miles for the activity.
2. You went skiing for 6 hours but actual time skiing at a moderate pace, not including riding on the lifts was 2 hours, you would record 12 miles for activity.
3. You went walking for 30 minutes and went 2 miles, you would record 2 miles.

Move Montana Activity Log

Name____Date____________________

Weekly Miles Goal ___________Total Miles_________ 8 Week Goal Miles________

Week	Day	Activity minutes or miles	Pedometer steps

Week	Day	Activity minutes or miles	Pedometer steps

Week	Day	Activity minutes or miles	Pedometer steps

Week	Day	Activity minutes or miles	Pedometer steps