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Nutrition Education for the Underserved Youth within the Greater Twin Cities Area through the InSports Foundation

Paige D. Deters
Bethel University

Allison Kaper
Bethel University

Maura Romanshek
Bethel University

NUTRITIONAL EDUCATION FOR THE UNDERSERVED YOUTH WITHIN THE GREATER TWIN CITIES AREA THROUGH THE INSPORTS FOUNDATION

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BY

PAIGE DETERS, PA-S

ALLISON KAPER, PA-S

MAURA ROMANSHEK, PA-S

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ABSTRACT

It has been examined that poor access to nutritious foods and limited opportunities for physical activity is prevalent among children from underserved families. These deficiencies contribute to increasing childhood obesity rates and emphasize the need for early interventions. Establishing nutritional literacy and understanding the importance of an active lifestyle in early childhood can lead to long-term health benefits and reduction in chronic disease later in life (HHS & USDA, 2015; Tsai et al., 2011; Wang et al., 2011). The InSports Foundation serves as a comprehensive non-profit organization that addresses many of these issues by providing children from underserved families with access to nutrition education, organized sports activities, and opportunities to learn how to incorporate healthy changes in their daily lives. The purpose of this project was to provide the InSports Foundation with a comprehensive literature review that focused on the deleterious health effects of poor dietary intake and physical inactivity in children in order to support the InSports Foundation's grant writing efforts. Another goal was to provide the camp nutrition educators with a more extensive, structured nutrition curriculum that was based upon researched information.

Through a collaborative effort between the Expanded Food and Nutrition Education Program (EFNEP) regional coordinator, the InSports Foundation core team members, and our project team members, we were able to revise the current nutritional curriculum to be more structured, comprehensive, and interactive. The InSports Foundation core team members were subsequently trained on the revised nutrition curriculum to train future volunteer nutrition educators to ensure the information is taught consistently. All written curriculum, visual props for interactive activities, and poster materials have been organized in a binder and given to the InSports Foundation.

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Introduction

Nutrition and physical activity are integral components of childhood growth and development. Unfortunately, limited access to nutritious food and exercise opportunities disproportionally affects low-income families and racial minorities (Kirkpatrick, Dodd, Reedy, & Krebs-Smith, 2012). Providing opportunities to establish nutritional literacy and promote an active lifestyle through participation in integrated health programs can lead to long-term health benefits, as well as produce positive behavioral changes, academic improvement, self-efficacy, and social competence in children (HHS & USDA, 2015; Jyoti, Frongillo, & Jones, 2005; Tsai, Williamson, & Glick, 2011; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). Examination of these positive health and behavioral outcomes, demonstrates the need for early intervention through comprehensive health programs, especially within underserved communities.

Background to the Problem

Promoting nutrition and maintaining an active lifestyle is significant, as the incidence of obesity has remained high for the past 25 years (HHS & USDA, 2015). According to the American College of Sports Medicine, approximately 32% of children aged 2-19 years old are overweight or obese (ACMS, 2013). This is largely due to physical inactivity and poor nutrition habits. Despite numerous programs that focus on improving access to nutritious foods, food insecurity remains a complex issue that dramatically affects a child's ability to consume nutrient-rich food items (Chang, Kim, & Chatterjee, 2017; Coleman-Jensen, Rabbitt, Gregory, & Singh, 2017; Eisenmann, Gunderson, Lohman, Garasky, & Stewart, 2011; Jyoti et al., 2005). Many of

the existing programs are designed to be supplemental and do not provide education on adapting long-term behaviors.

Physical inactivity is also contributing to expanding obesity rates. Physical activity guidelines state children between the ages of 6-17 years old should have 60 minutes of physical activity per day including aerobic exercise, muscle-strengthening, and bone-strengthening activities (USDHHS, 2008). This level of activity is not achieved by a large percentage of the U.S. population. According to one study, 61.5% of children ages 9-13 do not participate in any structured physical activity (McCambridge et al., 2006). A requirement of physical education courses may provide some activity for the children, but those courses alone do not always meet the daily requirements (CDC, 2010). According to the U.S. National State Indicator Report on Physical Activity (2010), only 17% of the 30.3% children involved in daily physical education courses met the daily physical activity requirements. Aside from inadequate physical education curriculum, lack of physical activity in adolescents can be attributed to inactive role models, increased societal demands, and insufficient access to safe recreational facilities (McCambridge et al., 2006). Teaching school-aged children positive nutrition habits and healthy behaviors, such maintaining an active lifestyle, is imperative, as unhealthy habits often carry over into adulthood (Bryd-Bredbenner, Moe, Beshgetoor, & Berning, 2013).

Based on current trends, it is projected that by the year 2030, the quantity of obese individuals in the United States will increase by 65 million. It is critical that this epidemic is urgently addressed and further preventative health measures are initiated. It has been well established that obesity is a precursor for chronic metabolic diseases, including type II diabetes, cardiovascular disease, and several forms of cancer; also, that increased healthcare disbursement is directly linked to the incidence of these diseases (Wang et al., 2011). Compared to normal-

weight individuals, obese patients incur 46% increased inpatient costs, 27% more physician visits and outpatient costs, and 80% increased prescription drug cost (Wang et al., 2011). Healthcare resources would be better utilized preventing and treating obesity rather than spending significantly more to treat chronic diseases precipitated by obesity (Wang et al., 2011). Physician Assistants and other healthcare providers serve an indispensable role in providing patient education and assisting patients in making positive, long-term health modifications. Throughout childhood and adolescence, tracking abnormal weight gain and providing interventional measures by healthcare providers can play an important role in preventing the onset of obesity. Healthcare providers are able to educate patients on the detrimental effects of poor nutrition and physical inactivity. Healthcare provider's patient education and interventions complement community outreach programs to address and prevent obesity-related chronic diseases. These aforementioned points highlight why community outreach programs, like the InSports Foundation, serve an important role in supplementing existing government and school programs, to assist in establishing healthy habits, promoting physical activity, and providing children nutrition education and exercise opportunities.

Problem Statement

Research supports the need for social networks and integrated nutrition and physical activity programs that incorporate all aspects of a child's life, including school curriculum, after-school programs, home environment, and healthy behaviors being modeled by parents or guardians in order to reduce physical inactivity and food insecurity (USDHHS, 2008). The InSports Foundation serves as a comprehensive non-profit organization that addresses many of these issues by providing children from underserved families with access to nutrition education, organized sports activities, and opportunities to learn how to incorporate healthy changes in their

daily lives. This is why outreach and education programs, like InSports Foundation, are paramount in addressing the growing incidence of childhood obesity as a direct result of physical inactivity and inadequate nutrition (Bryd-Bredbenner et al., 2013). After partnering with InSports Foundation to assess the needs of the program, it was determined that the existing nutrition curriculum needed revision. The current program was superficial and inconsistently taught. This project endeavored to enhance the existing nutrition curriculum to include health education that was based upon researched information and interactive activities that would lead to positive dietary changes in underserved kids. By providing the InSports Foundation camp nutrition educators with a more extensive, structured presentation and incorporating interactive activities, the amendments will provide an effective and memorable way to share the researched dietary guidelines.

Acquiring additional revenue was also identified as a need of the program in order to continue to support their outreach efforts. A literature review conducted on physical activity, nutrition, and well-being was provided to InSports Foundation to supplement their grant applications. Following a meeting with a grant writing manager from Bethel University, additional grant writing strategies were also conveyed to the InSports Foundation to further support their grant writing efforts.

Purpose

The purpose of this project is to assist in acquiring additional funding and to enhance the existing nutrition curriculum for InSports Foundation to continue to provide quality health education and opportunities for underserved kids. The literature review conducted on physical activity, nutrition, and well-being will be employed by InSports Foundation to support their grant writing efforts to procure additional revenue. Based upon the needs assessment, InSports

Foundation identified that having an objective measurement of the program's efficacy is a requirement for many grant foundations. Going forward, InSports Foundation will analyze the acquired knowledge of the campers in order to assess the effectiveness of their nutrition education portion.

Currently, nutrition education is a minimal component of InSports Foundation camps. Providing a more extensive, structured presentation and incorporating an interactive game into the nutrition portion of the camps would be advantageous in sharing researched dietary guidelines and effective ways to make positive dietary changes. This project aims to address the needs identified by InSports Foundation.

Significance of the Project

The literature has revealed the severity of the obesity epidemic and displays the necessity of comprehensive health programs, like InSports Foundation, to address this issue through early interventions and health education in childhood. Providing a nutrition education curriculum backed by evidence-based research would strengthen the nutrition education portion of the camp. A lesson plan supplemented by an organized activity and informational handouts would improve the effectiveness of the interventions provided. The research obtained through the literature review will also support InSports Foundation's grant writing efforts, in addition to the grant writing strategies recommended during a meeting with Bethel University's Grants Manager. The anticipated funds through grants would provide InSports Foundation with the opportunity to impact more children through supporting larger groups, hiring more staff, and offering additional scholarships and events. A permission letter outlining a partnership between Bethel University's Physician Assistant Program and InSports Foundation is included in the Appendices (See Appendix A).

Definition of Terms

The following terms are defined for clarity and uniform understanding:

Nutrition is the "science of food; the nutrients and the substances therein; their action, interaction, and balance in relation to health and disease; and the process by which the organism (e.g., human body) ingests, digests, absorbs, transports, utilizes, and excretes food substances." (Byrd-Bredbenner et al., 2013, pg. 4)

Physical inactivity is consistent with a sedentary lifestyle, meaning the individual does not participate in at least 30 minutes of physical activity of moderate intensity (40%-<60% VO_2R) three days of the week for at least three months (ACSM, 2013).

Food insecurity is defined as the limited or uncertain availability to acquire food that is nutritionally adequate and safe in socially acceptable ways (Bickel, Nord, Price, Hamilton, & Cook, 2000).

Underserved children are typically defined by those whose family annual income is at or below $22,000 (National Center for Education Statistics, 2014).

Conclusion

Further exploration of the existing dietary recommendations and physical activity programs provides additional insight to the obesity epidemic and the necessity of comprehensive health programs to address the issue. The following chapter examines the effects of food insecurity on achieving nutrition goals, physical inactivity, obesity rates, interventions provided by schools, and the need to advocate for programs with research and monetary support through grant funding.

Chapter 2: Literature Review

Introduction

Nutrition and physical activity are integral components of childhood growth and development. Establishing nutritional literacy and understanding the importance of an active lifestyle in early childhood can lead to long-term health benefits and reduction in chronic disease later in life (HHS & USDA, 2015; Tsai et al., 2011; Wang et al., 2011). These modifiers can produce positive behavioral changes, academic improvement, self-efficacy, and social competency (Briggs, Fleischhacker, & Mueller, 2010; Jyoti et al., 2005). Unfortunately, limited access to nutritious food and exercise opportunities disproportionally affects low-income families and racial minorities (Kirkpatrick et al., 2012). Despite numerous programs that focus on improving access to nutritious foods, food insecurity remains a complex issue that affects between 12.3% and 21% of U.S. households with children (Chang et al., 2017; Coleman-Jensen et al., 2016; Eisenmann et al., 2011). It is common for children to have poor nutrition habits, with many consuming increased amounts of sugar-sweetened beverages, fast food, and high-calorie snacks with low nutritional value between meals (Byrd-Bredbenner et al., 2013; Ritchie et al., 2015). This is a growing issue, as childhood obesity rates have doubled over the last 20 years (Briggs et al, 2010). Trends towards increasing numbers of obese children and adolescents is concerning, because risk factors for chronic disease begin developing younger than previously thought. In fact, atherosclerosis, a precursor for several chronic conditions, begins developing during early childhood (Byrd-Bredbenner et al., 2013).

This research examines the need for early intervention of integrated health programs, especially in underserved communities to prevent chronic disease and reduce healthcare expenditure. The information in the literature review will be utilized by InSports Foundation to

support their grant writing efforts, as well as provide research-based information to support their nutrition program. The following will introduce the most recent Dietary Guidelines for Americans, as well as highlight national programs and services that are founded upon the guidelines' principles. Having an understanding of the services provided, as well as the benefits and shortcomings of these nutrition programs, is essential for InSports Foundation to provide an effective nutrition program. There is also further exploration of the effects of food insecurity and its role in childhood development, cognitive function, and its contribution to childhood obesity.

Dietary Guidelines

The Office of Disease Prevention and Health Promotion (ODPHP) is a government department that undertakes and coordinates initiatives and activities in disease prevention, health promotion, preventative health services, and health education (ODPHP, n.d.). It does so by instituting programs and services that support national health objectives and promote their mission through education and making resources available to the general public (ODPHP, n.d.). One of their national health objectives includes the Dietary Guidelines for Americans, which encompasses ongoing research in nutrition sciences; the information is updated every five years and provides recommendations in selecting healthy nutrition options (HHS & USDA, 2015). This research reflects a greater understanding of the relationship between nutrition and human health; it is also the authority for nutrition information in formulating policies and programs across the United States (HHS & USDA, 2015). The Dietary Guidelines for Americans are intended for policymakers and health professionals to utilize in education and promotion of positive health choices to enhance overall well-being and prevent chronic disease (HHS & USDA, 2015). The researchers focused the Dietary Guidelines for Americans on individuals of two years of age and older, including those who are at increased risk of chronic

disease. The government has recognized the importance of early nutrition intervention and its role in preventing chronic disease and improving health outcomes throughout the lifespan (HHS & USDA, 2015). Federal programs then utilize the culmination of the latest nutrition research to meet the needs of Americans and specific population groups through food, nutrition, health policies, and nutrition education materials for the public (HHS & USDA, 2015).

The Dietary Guidelines for Americans recognize that there are various components that impact the diet and physical activity choices that individuals make, and they are written with this perspective. It extends to persons of different backgrounds, cultures, and traditions. It also acknowledges that income and circumstances have a significant effect on food and physical activity decisions. Health and food access disparities exist due to insufficient income or resources for food (HHS & USDA, 2015). The Dietary Guidelines for Americans provide options that can be adjusted for every individual's level of income and can accommodate for access and personal preferences. All of society should align with principles to: "make food and beverage choices that meet the key recommendations for food groups, subgroups, nutrients and other components in combination to contribute to overall healthy eating patterns," and to meet nutritional needs through foods which provide nutrients that are associated with health benefits (HHS & USDA, 2015, p. 11). Individuals should aim to consume fortified foods and dietary supplements based on their age, life stage, and gender. There are additional nutrition recommendations, but they are intended to help change social norms and values. Transitioning Americans to adopt healthier lifestyles will benefit the U.S. population today as well as future generations (HHS & USDA, 2015).

Nutrition Programs and Services

One way the United States Department of Agriculture and other agencies implement the dietary guidelines is through MyPlate. Figure 1 represents a guideline to build healthy eating patterns by making healthy choices across the food groups (USDA, 2017b). It is a depiction of a place setting with a plate and glass that represents the suggested quantities for the five food groups: fruits, vegetables, grains, protein foods, and dairy. It educates on these food groups as being the building blocks for an overall healthy eating pattern. Information is also provided about different healthy options within each food group. The aim is to encourage the population to focus on variety and nutritional value, and to limit saturated fats, sodium, and added sugars (USDA, 2017b). MyPlate encourages making small changes to create healthier eating styles that meets individual needs and improves overall health (Chang & Koegel, 2017).

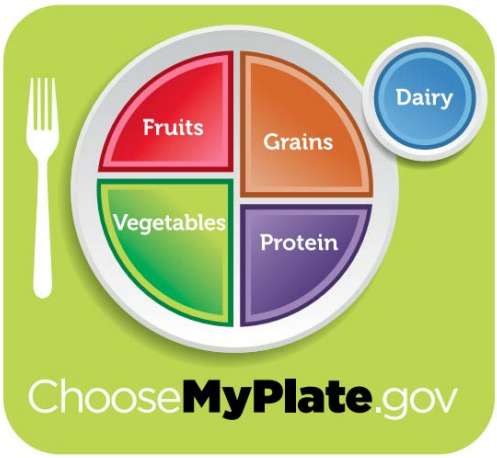

Figure 1. MyPlate provides a colorful depiction of USDA's nutritional suggestions to provide a healthy and well-balanced meal (USDA, 2017b).

In addition, supplemental nutrition programs are mandated by law to comply with the current dietary guidelines (HHS & USDA, 2015). One foundation that plays a substantial role in safeguarding the health of low-income and nutritionally at-risk women, infants, and children under the age of five is Women, Infants and Children (WIC). This program also includes pregnant, breastfeeding, and non-breast feeding postpartum women. WIC provides federal grants to states for healthcare benefits and referrals, education on healthy eating, and vouchers that can be utilized by low-income families on approved nutritious foods at participating food stores (USDA, 2016). The program has been largely successful; it has been shown to lower Medicaid costs for participants who utilized the benefits of the program through their pregnancy, resulting in longer gestation periods, higher birth weights, and decreased infant mortality rates than non-participants (USDA, 2016).

Studies conducted by the Food and Nutrition Services, which is a federal agency responsible for administering the nation's domestic nutrition assistance programs, concluded that WIC is "one of the nation's most successful and cost-effective nutrition intervention programs" (para. 1); reports demonstrate that WIC protects and improves the health and nutritional status of low-income women, infants, and children (USDA, 2016). WIC has played a significant role in containing health care costs, as it has improved birth outcomes, infant feeding practices, immunization rates, and cognitive development among other successes (USDA, 2016). Studies have also found WIC to have a positive impact on children's diets and diet-related outcomes such as: higher mean intakes of iron, Vitamin C, thiamin, niacin, and vitamin B6 without an increase in food energy intake (USDA, 2016). It was also found that WIC was more effective than other cash income or benefit programs, like the Supplemental Nutrition Assistance Program (SNAP), at improving preschoolers' intake of key nutrients (Rose, Habicht, & Devaney, 1998).

SNAP offers nutrition assistance to low-income individuals and families (USDA, 2017c). In order to be eligible for benefits, individuals and families must meet specific criteria, concerning household income. The Food and Nutrition Service "works with state agencies, nutrition educators, and neighborhood and faith-based organizations to ensure that those eligible for nutrition assistance can make informed decisions about applying for the program and can access benefits" (USDA, 2017c, para. 1). SNAP has significant costs and it is uncertain if this assistance program provides better long-term health outcomes (USDA, 2017c). Obesity is rather prevalent among low-income groups and food assistance programs, such as SNAP, have been examined to determine if such programs are contributing to the growing problem of obesity. A 2012 systematic review suggests that there is a positive correlation in some populations between participation in food assistance programs and increased obesity rates. (Debono, Ross, & Berrang-Ford, 2012).

Another existing federal program is the National School Lunch Program (NSLP). NSLP is a federally assisted meal program that is present in public and nonprofit private schools (HHS & USDA, 2015). It provides students with nutritionally balanced, reduced-cost or free lunches on weekdays. This program supports millions of children across the nation. In 2016, 30.4 million children received free or reduced lunches throughout the school year. Participating school districts receive cash subsidies and food for each reimbursable meal they serve, as long as the meals meet nutrition requirements (HHS & USDA, 2015). This program is important in providing one-third of daily nutrition needs of most children. Research shows that kids with healthier eating patterns have improved academic performance (HHS & USDA, 2015). USDA research also displays that children who receive lunch through the NSLP have better nutritional intake compared to students who bring a home-packed lunch to school; NSLP participants have

substantially lower intake of added sugars, as well as higher consumption of vegetables, milk, and meat products than nonparticipants (Gleason & Suitor, 2001).

The Impact of Household Food Insecurity

Despite numerous programs that focus on improving access to nutritious foods, food insecurity remains a complex issue that affects between 12.3% and 21% of United States households with children (Chang et al., 2017; Coleman-Jensen et al., 2016; Eisenmann et al., 2011; Jyoti et al., 2005). Often, children from food-insecure and low-income households do not meet the recommended intake for most food groups due to the higher cost of foods such as fruits, vegetables, meat, and fortified dairy products (Kirkpatrick et al., 2012). Dietary insufficiencies result in increased incidence of illness, behavioral problems in school, higher rates of depression, lower academic scores, and impaired physical growth and cognitive development (Byrd-Bredbenner et al., 2013).

Food insecurity and its impact on child development began to gain attention in 1990 when Congress enacted the Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program. The purpose of this program was to establish a standard measurement for determining food insecurity across the nation (Bickel et al., 2000). During the same year, the Life Sciences Research Office of the Federation of American Societies for Experimental Biology formally defined food insecurity as the "limited or uncertain availability to acquire food that is nutritionally adequate and safe in socially acceptable ways" (Bickel et al., 2000). In 1995, the U.S. Census Bureau collected the first data set pertaining to food security status. This information continues to be collected on an annual basis in order to track trends pertaining to household food security in America (Bickel et al., 2000; Eisenmann et al., 2011).

Many factors contribute to a household's food security status, including household income, financial management skills, nutrition literacy, food budgeting, and food management practices (Chang et al., 2017). Some households experience intermittent or persistent food insecurity because they chose to not participate in food assistance programs such as SNAP (Beharie, Mercado, & McKay, 2017). In 2011, the National Survey of Children's Health determined that 30% of families who qualified for SNAP did not participate in the program (Beharie et al., 2017). Studying factors that contribute to food insecurity is further confounded by the significant variability that exists across different demographic categories. According to the 2008 Child Protective Services report, 37.2% and 27.6% of food insecure households were headed by single mothers and fathers, respectively, while 14.3% were married couples. There were also significant differences between racial ethnicities: 10.7% of food insecure households were non-Hispanic whites, 15.6% black, and 26.9% Hispanic. There was little variation between metro and non-metro households (Eisenmann et al., 2011). Blanket policies to address food insecurity are inadequate due to the diverse and unique needs of each household.

Proper nutrition is vital to supporting brain health and cognitive development, but very few longitudinal studies exist that examine the impact household food insecurity has on academic performance and childhood development (Zamroziewicz, Talukdar, Zwilling, & Barbey, 2017). This lack of data is mainly due to the expense and participant attrition rate of conducting large-scale, longitudinal studies; however, a lack of strong supporting evidence has created difficulties in establishing a causal relationship between household food insecurity and poor health and development outcomes. Jyoti et al. (2005) used data from the Early Childhood Longitudinal Study-Kindergarten Cohort (CLSKC) to study this relationship. Analysis revealed that when confounding variables were accounted for, household food insecurity predicts

statistically lower outcomes in academic achievement in reading and mathematics, delayed social development in boys, and increased body mass index (BMI) gains in girls between kindergarten and third grade (Jyoti et al., 2005). Other research has shown that children who experience food insecurity miss more days of school, are more likely to repeat a grade level, and are at higher risk for negative health consequences that extend into adulthood, including diabetes, chronic disease, and sleep disturbances (Jyoti et al., 2005; Suor, Sturge-Apple, Davies, Cicchetti, & Manning, 2015). It has also been suggested that food insecurity generates psychological stress, which can raise cortisol levels leading to depression (Jyoti et al., 2005; Suor et al., 2015).

One aspect of food insecurity that is often overlooked in research is the protective benefit of having strong social networks and supportive communities. Families who are isolated from their community or lack social support, tend to struggle more to meet the basic needs of family members when faced with economic insufficiencies (Beharie et al., 2017). A 2017 study by King, argues that refocusing efforts on building communities that support an integrated approach to health, may be more effective in reducing and preventing food insecurity than providing supplemental food through programs such as SNAP or WIC (King, 2017).

Poor Nutrition Habits and Growing Incidence of Obesity in the United States

Although access to information on the importance of maintaining a healthy weight and consuming a well-balanced diet has never been more readily available, nutrition experts note that the incidence of obesity has remained high for the past 25 years and that childhood obesity rates continue to climb (HHS & USDA, 2015). According to a report published by the Centers for Disease Control and Prevention (CDC), 17% of children ages 2-19 years and 36% of adults were obese (defined as having a BMI score of ≥ 30) during 2011-2014 (CDC, 2017). This trend is especially alarming because obesity not only affects a child's immediate health but also is

implicated in the development of long-term health risks such as diabetes and hypertension (Briggs et al., 2010).

While hereditary and environmental factors may contribute to higher rates of childhood obesity, poor dietary habits and lack of physical activity have been identified as leading causes for this trend (Byrd-Bredbenner et al., 2013). Key behaviors directly linked to higher rates of childhood obesity include excessive intake of sugar-sweetened beverages, fast food, high-calorie snacks between meals, and reduced intake of whole grains, fruits, vegetables, low-fat dairy products, and water (Byrd-Bredbenner et al., 2013; Ritchie et al., 2015). During a 1999-2000 study, it was determined that only 0.7% of boys aged 14-18 years consumed the recommended amounts of fruits and vegetables (Briggs et al., 2010). Consuming a balanced diet of nutrient-rich food items is essential for proper growth and development. Furthermore, the brain requires approximately 20% of the body's energy input; therefore, adequate nutrition is vital to supporting brain health and cognitive development, especially in children (Zamroziewicz et al., 2017).

Studies have shown that integrated health programs are effective in reducing BMI values and subsequently improving academic performance in children (Hollar et al., 2010; Ritchie et al., 2015). Being that children spend a significant portion of their time at school, educational institutions and after-school programs serve an important role in establishing healthy habits, promoting physical activity, and providing students from food insecure households with access to nutritional foods. The American Dietetic Association (ADA), School Nutrition Association (SNA), and Society for Nutrition Education (SNE) agree schools should offer comprehensive health and wellness programs for students in preschool through grade 12. The health and wellness program should foster a healthy school environment; promote age-appropriate health

education; provide physical education, health, nutrition, counseling and psychological services; promote the health and welfare of faculty; and encourage families and school staff members to be involved within their community (Briggs et al., 2010). One program, Healthier Options for Public Schoolchildren (HOPS), evaluated the effects of an integrated school health program that include dietary intervention; increased physical activity; holistic nutrition; and healthy lifestyle management curriculum for children, parents, and school staff, over the course of the two-year study. On average, students participating in the obesity intervention program lost weight and demonstrated improvements in math and reading scores (Hollar et al., 2010).

Access to nutrition education is important for understanding the negative impact of inadequate nutrition, poor health habits, inactivity, and obesity. Unfortunately, effective nutrition education is lacking in many school systems. A study conducted by the U.S. Department of Education determined that the average elementary student receives 13 hours of nutrition education, which is well below the recommended 50 hours per school year (Briggs et al., 2010). This deficiency is compounded when nutrition education, physical education, and recess are eliminated in schools in order to meet educational requirements implemented as part of The No Child Left Behind Act of 2001 (Briggs et al., 2010). Studies such as these, demonstrate why developing integrated school health programs and forming partnerships with parents and community organizations is paramount to ensuring every child has comprehensive nutrition-related health services.

Physical Activity Guidelines

In addition to a healthy eating pattern, consistent physical activity is one of the most important ways Americans can improve their health (HHS and USDA, 2015). The U.S Department of Health and Human Services publishes the Physical Activity Guidelines for

Americans, which entails a comprehensive set of recommendations on the quantity and quality of physical activity needed each day (HHS and USDA, 2015). An advisory committee compiled the current recommendation, which state children ages 6-17 years old should have 60 minutes of of aerobic, muscle-strengthening, and bone-strengthening activities per day (USDHHS, 2008).

Physical activity can be divided into two categories: baseline activity, referring to the activities of daily living, and health-enhancing physical activity, which includes jump roping, brisk walking, lifting weights, dancing, participating in sporting events, etc. (USDHHS, 2008). Sixty minutes of exercise may seem like an insurmountable objective for sedentary children, but any physical activity is better than none. It is encouraged to gradually increase exercise duration and intensity over time to maintain a sustainable life change. Implementing these physical activity recommendations early in childhood can reduce the risk factors that may lead to chronic diseases (USDHHS, 2008).

The health-enhancing physical activity category includes aerobic exercise and resistance training. Aerobic exercise alone has been shown to reduce a child's systolic and diastolic blood pressure just after eight months of training (McCambridge et al., 2006). However, when paired with resistance training, there is a sustainable decrease in hypertension and improvement of bone strength throughout adulthood (McCambridge et al., 2006). Increasing the intensity of aerobic exercise further reduces chronic disease risk factors and increases strength, endurance, self-esteem, and mental health. Not only does physical activity provide these benefits, but it also prevents a multitude of diseases, such as hypertension, diabetes, heart disease, etc. (USDHHS, 2008).

The rates of obesity and comorbidities have reached epidemic proportions amongst youth. The number of obese children and adolescents has increased by almost 50% in the last

two decades, averaging 17% of overweight school age children in the U.S. (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008). Due to the decreased longevity associated with childhood obesity, some researchers predict that parents of obese children will outlive their child by the 21st century (Lifshitz, 2008). This is due to obesity-accelerated deterioration of their health; when most children are diagnosed with childhood obesity, they have already reached the 95th percentile of BMI (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008). When a child is diagnosed with obesity and it is continued into their second and third decade of life, their life span is decreased by 17-20 years. Because excessive weight gain has been reported to start as early as years 5-7, it is projected that life expectancy will further decrease due to the deleterious health impact of obesity (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008).

Childhood obesity is influenced by numerous factors, including genetic, social, environmental, and behavioral components (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008). Childhood obesity prevalence increases by approximately 80% if both parents are obese and 40% when one parent is obese (Lifshitz, 2008). It is established that hereditary components are a factor in the development of childhood obesity; however, environmental factors are more influential (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008). Without any hereditary predisposition as a child, social interactions alone have a large impact on a child's weight; the obesity rate increases by 57% when a child's friend is obese (Lifshitz, 2008). These genetic, environmental, and social aspects also contribute to chronic diseases associated with obesity (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008; Tremblay et al., 2011).

The incidence of chronic disease has become more prevalent and more severe with rising trends in childhood obesity (Tremblay et al., 2011; Wang et al., 2011). Risk factors for chronic disease present prematurely and progress more rapidly in childhood-related obesity in

comparison to adult-onset obesity (Lifshitz, 2008; Tremblay et al., 2011). Health problems associated with cardiovascular disease, cancer, type 2 diabetes, and hypertension are seen prematurely in children who are overweight (Byrd-Bredbenner et al., 2013; Lifshitz, 2008; Wang et al., 2011). An obese child is at a greater risk of initiating the atherosclerotic process in their adolescent years, developing asthma, glucose intolerance, or hyperlipidemia, and there is an increased probability of developing psychological disabilities (Lifshitz, 2008). Despite compelling evidence about the detrimental health impacts childhood obesity imposes, the epidemic persists (USDHHS, 2008).

An obese child is prone to continue their unhealthy lifestyle throughout their adulthood; "It has been observed that about 40% of overweight children will continue to have increased weight during adolescence and 75-80% of obese adolescents will become obese adults" (Lifshitz, 2008, p. 53). Those who are introduced to an active lifestyle within the first decade of their life are more successful at sustaining a healthy lifestyle (McCambridge et al., 2006). The lack of consistent, structured activity in children and adolescents has become more prevalent over the past two decades (Lifshitz, 2008). A survey in 2002 reported 61.5% of children ages 9-13 do not participate in any structured physical activity (McCambridge et al., 2006). Among the most reported sedentary behaviors of children, watching television and playing video or computer games are most common (Byrd-Bredbenner et al., 2013; Tremblay et al., 2011). Children ages 8-18 spend an average of 7.5 hours of screen time per day, while the American Academy of Pediatrics recommends no more than 14 hours of screen time per a week (Byrd-Bredbenner et al., 2013; Tremblay et al., 2011). Although screen time is challenging to avoid in today's society, inactivity associated with screen time is a large contributor to the increasing early development of obesity-related chronic disease (Byrd-Bredbenner et al., 2013; Tremblay et al.,

2011). Those who watch more than 2 hours of television per day were shown to have higher serum cholesterol levels and higher blood pressure than those who watched less. Ninety-four of 119 studies reported a direct correlation between BMI and sedentary behavior (Tremblay et al., 2011). Lack of physical activity in adolescents can be attributed to inactive role models, increased societal demands, insufficient access to safe recreational facilities, and a shortage of structured daily physical activity (McCambridge et al., 2006).

Implementing preventative measures is critical to address the childhood obesity epidemic (Lifshitz, 2008). All community aspects need to be involved in making physical activity more attractive, affordable, and sustainable for all demographics. Physical education classes alone are not enough to offset the rising rates of childhood obesity (USDHHS, 2008). Further initiation is mandated to combat the progression of the childhood obesity epidemic. All children deserve to have the knowledge, support, and opportunities that allow them to thrive intellectually, physically, and socially (USDHHS, 2008).

Conclusion

Strong evidence supports the need for social networks and integrated nutrition and physical activity programs that incorporate all aspects of a child's life, including school curriculum, after-school programs, home environment, and healthy behaviors being modeled by parents or guardians in order to reduce physical inactivity and poor nutritional choices (King, 2017).

In order to develop healthy habits for life, it is imperative that dietary practices foster moderation and variety and that good exercise habits are prioritized and strongly encouraged in early childhood (Lifshitz, 2008). Comprehensive health programs achieve this by providing an opportunity for underserved children to receive adequate nutrition and physical activity to reach

developmental, social, and academic milestones (King, 2017). The increasing incidence of obesity, which is related to a decline in physical activity, inadequate access to nutritious foods, and lack of knowledge in healthy lifestyles contribute to chronic disease and the need for preventative health measures. These reasons are why outreach and education programs, like InSports Foundation, are paramount in addressing these issues.

Chapter 3: Methodology

Introduction

The purpose of this project was to enhance the existing nutrition curriculum for the InSports Foundation to continue to provide quality health education and opportunities for underserved children during free athletic camp events. Inconsistent teaching was inevitable without a curriculum and an unpredictable camp volunteer staff. Providing a presentation and incorporating an interactive game into the nutrition portion of the camps is advantageous in sharing researched dietary guidelines and effective ways to make positive dietary changes.

Another need identified by the InSports Foundation was assistance with their grant writing efforts. A literature review and information regarding grant writing strategies has been provided to InSports Foundation's grant writing team. This project did not include grant writing; InSports Foundation assumed this responsibility. The strategies provided will have longevity over subsequent years for grant applications, which extends beyond this project's timeline.

Agency Information

The InSports Foundation has been an official 501c3 non-profit since 2013 with the mission of "helping kids get in the game" (InSports Foundation, 2013). In four years, the foundation has impacted over 27,000 kids through scholarships, team sponsorships, and InSports Days. InSports Days are free athletic camps that allow underserved children, kindergarten through eighth grade, to be in a supportive environment that encourages pursuing a healthy lifestyle. In addition to community outreach through various sporting activities, InSports Foundation values cognitive and personal strength and provides goal setting and nutrition education sessions during these camps. Scholarships and team sponsorships are also awarded

consistently; over $200,000 has been donated to underserved children and sports teams to provide proper equipment, travel expenses, and participation fees (InSports Foundation, 2013).

InSports Foundation has connections with professional Minnesota sports teams and local school districts through their association with Innovative Office Solutions, their parent for-profit company. This association enables InSports Foundation to host many InSports Days within Minnesota's professional sporting facilities. InSports Foundation's relationship with local school districts has also connected their organization with children from low-income families and those eligible for the National School Lunch Program (NSLP). InSports Foundation also partners with two other organizations, Active Solutions and Matter, to enhance the impact of their camps. During the summer school programs, Active Solutions employs physical education teachers to organize a variety of structured physical activity for children from low-income families in the Osseo, Chaska/Chanhassen, and Hopkins school districts. In 2016, InSports Foundation's summer programs were held in nine different schools, reaching over 1,500 participants, most of whom were eligible for the NSLP. Matter is a non-profit organization that is currently responsible for the InSports Day's nutritional education portion and donates MatterBoxes to the children who attend. The MatterBox supplies healthy food, nutritional information according to the USDA standards, and an interactive activity to take home that encourages healthy eating. Historically, Matter provided these services as a donation and are now moving towards requiring a fee, which will impact InSports Foundation's ability to continue to provide this portion of the camps (InSports Foundation, 2013). InSports Foundation will continue to offer MatterBoxes until a final determination regarding their partnership has been reached.

Rationale for Project

Research supports the need for social networks, integrated nutrition, and physical activity programs that encompass all aspects of a child's life. An adequate and supportive school curriculum, after-school programs, and home environment together help build healthy behaviors to reduce physical inactivity and food insecurity (USDHHS, 2008). The InSports Foundation addresses these issues by providing children from underserved families with access to nutrition education, organized sports activities, and opportunities to learn how to incorporate healthy changes into their daily lives. A needs assessment identified that enhancing the current InSports Foundation's nutrition program would further the impact of their camps. After evaluating existing national health and nutrition programs, this project presented InSports Foundation with a modified nutrition education curriculum to be implemented during future camps. Components that worked well in existing national health and nutrition programs were incorporated into the nutrition education curriculum presented to InSports Foundation.

In addition, this project has provided statistical data pertaining to inadequate nutrition, physical inactivity, and the effects of both on the underserved community to the InSports Foundation's grant writing team. InSports Foundation will utilize this information in future grant applications. This project also provided InSports Foundation with grant writing information and strategies to optimize their grant writing efforts. Ultimately, InSports Foundation endeavors to intervene on the growing obesity epidemic and to help alleviate obesity-related health care costs.

Population

This project worked directly with InSports Foundation's core team members to educate them about the revised nutrition curriculum in order to equip them to further train nutrition

educators who assist in running camps. This education occurred over one day in late spring of 2018. InSports Foundation's staff and interns were provided written curriculum to ensure consistency during future volunteer training sessions. Camp nutrition educators include InSports Foundation's staff, interns, and camp volunteers, depending upon available staffing at each event.

Project Plan and Implementation

InSports Foundation works to address issues related to childhood obesity, poor nutrition, and physical inactivity by providing children from underserved families with access to nutrition education, organized sports activities, and opportunities to incorporate healthy changes in their daily lives (InSports Foundation, 2013). Based upon a needs assessment, the project plan was to improve upon the current nutrition curriculum and to standardize information that is presented to camp participants and their families. Additionally, InSports Foundation identified the need for an objective measurement of knowledge gained during InSports Day camps, as this is a requirement for many grant foundation applications and will further entice private donors. To objectively measure the quality of information conveyed through the revised nutrition curriculum, participants complete a brief questionnaire during camp registration to assess their incoming knowledge about healthy eating and the health benefits of physical activity. The same questions are asked following the nutrition portion of the camp. Questions included on the pre- and post-camp questionnaire were established by the InSports Foundation's grant writing team. This questionnaire will be piloted during the summer InSports Day camps, and InSports Foundation will decide upon continuation of this assessment at a later date.

After check-ins and camp introduction, participants engage in sports activities before moving to the nutrition portion of the camp. The nutrition session is afforded 15-20 minutes and

includes a healthy snack provided by MatterBox, an overview of the health benefits of consuming a diet rich in fruits and vegetables, an educational game tailored to the age ranges of camp participants, and ways to make healthy decisions at home. Camp nutrition educators present curriculum topics that are appropriate for the age group, education level, and interests of the participants in the time allotted. All written curriculum and materials have been organized in a binder and given to InSports Foundation (See Appendix B). The curriculum has been formatted to be easily accessible for the InSports Day camp nutrition educators. Poster displays present what a healthy diet entails and how various nutrients affect the body (See Appendix C). As participants eat their snack, a camp nutrition educator explains how proper nutrition impacts sports performance and is protective in preventing the onset of chronic diseases. Depending on the remaining time, camp nutrition educators can select an appropriate activity that tests nutrition knowledge in an interactive way. During these activities, the camp nutrition educator provides examples of how these healthy decisions can become a lifestyle. The last portion of the camp is reserved for goal setting. Camp participants write down goals pertaining to health and academics, as well as their individual and team sports goals, on a take-home poster board. The same questionnaire that was administered at the beginning of the camp will be administered again during the goal setting session. Analysis of the data for pre- and post-assessment will be completed by InSports Foundation to measure the effectiveness of the education provided. Concluding the camp, participants receive a sample grocery list and meal plan for a two-week period, as well as tips about budgeting, grocery shopping, and meal preparation.

The needs assessment also identified the requirement for additional funding in order to expand and improve upon InSports Foundation's current programs. In an effort to increase the amount of funding received, Bethel University's Grant Manager, Pamela Buchanan, was

consulted on grant writing strategies (P. Buchanan, personal communication, February 15, 2018). Information obtained during this meeting was provided to InSports Foundation. Discussion points included: Important details to include on grant applications, the use of an objective measurement to demonstrate program efficacy, ways to determine which grants are worth pursuing, and how to apply for recurrent grants. InSports Foundation was also supplied with a literature review, which supports why their interventions and outreach programs are important in combating increased physical inactivity and poor nutrition.

Although this community project focuses on a vulnerable population, there are no ethical concerns, as the InSports Foundation is responsible for all recruitment. Furthermore, event participants' attendance is voluntary and poses no additional risk to the individual.

Potential Project Barriers

Potential barriers that could inhibit InSports Foundation's impact and limit the effectiveness of this community service project include: population selection, parental involvement, financial support, time constraints, and inconsistent volunteer participation. This project will not have an influence on which student populations participate in the InSports Day camps as the InSports Foundation is responsible for all recruitment. This project cannot control whether information that is provided to camp participants reaches the parent(s). Parental involvement is essential in making dietary changes, but this project cannot account for decisions that are made at home. However, ensuring camp participants are engaged and excited about learning the importance of good nutrition and incorporating healthy choices into their daily lives can impact food decisions made at home. To account for variable family dynamics and nutrition literacy, a handout outlining tips for purchasing nutritious food on a budget, as well as healthy recipes is sent home with each camp participant to share with their parents.

InSports Day camps rely heavily on volunteers to conduct camp activities, administrative duties, and serve as camp nutrition educators. Since the same volunteers do not participate in each camp, it is possible for the nutrition education to be inconsistent. To minimize discrepancies in the nutrition information presented to camp participants, a nutrition curriculum was written with sufficient detail to ensure all camp participants receive the same information. Furthermore, the amount of time allotted for the nutrition curriculum is a challenge as it is limited to 15-20 minutes; therefore, it is imperative the information presented during these sessions be highly structured and impactful. Another potential barrier that affects the longevity of the camp and their capacity to offer scholarships is the ability of the InSports Foundation's to secure grant funding and private donations. Despite these barriers, the information provided by this community service project will further educate underserved populations on the importance on good nutrition and will enhance InSports Foundation events in the future.

Project Tools

Project tools were tailored specifically for low-income and underserved populations in grades Kindergarten through eighth grade. See Appendix D for a population that is reflective of InSports Day camp participants. InSports Foundation aims to work with underserved populations; therefore, students from low-income school districts that rely heavily on the NSLP are invited to participate (A. Deters, personal communication, October 2, 2017).

The University of Minnesota's Expanded Food and Nutrition Education Program (EFNEP) is a government-funded program that supports healthy lifestyles and provides publicly available resources (USDA, n.d.). These resources will be utilized in the development of the InSports Day camps' nutrition education curriculum. EFNEP is designed for low-income families to build the skills, attitudes, and behaviors needed to improve nutrition habits and

physical activity through interactive education. EFNEP accomplishes this by teaching low-income families ways to improve their diets, increase daily physical activity, establish a food budget, and increase their knowledge about nutrition and dietary needs (USDA, n.d.). EFNEP provides over 50 Energizers, which are activities that integrate nutrition information with physical activity and are publically available through their website (USDA, n.d.). Listed on each Energizer is the target age/grade level, equipment needed, rules/directions, possible variations, and a nutritional note for the educator to explain to the children during the activity (See Appendix E). Educators through the Community Nutrition Educations (CNEs) of EFNEP are not teaching during this camp because the limited amount of time does not fit their current curriculum, but our involvement established the connection between EFNEP and InSports Foundation. This provides the potential for partnership between these two entities in the future.

Based on the curriculum provided by EFNEP, informative, colorful depictions of fruits and vegetables will be displayed on poster boards during the camp. Each poster board is color-coded and describes how each fruit or vegetable enhances the body physically and mentally to prevent chronic diseases (See Appendix C). These posters will be utilized as talking points during the presentation of the MatterBox (Monson & Roskelley, 2015).

The updated curriculum is also supplemented by MyPlate, through the USDA Food and Nutrition Service, which provides information on how to eat healthy while on a budget (USDA, 2017a). MyPlate communicates the importance of a healthy, well-balanced meal for children and provides accessible resources and guidelines. A grocery list and daily menu consisting of healthy food options at a modest price will be given to each child at the conclusion of the InSports Day camp. The menu is designed to meet average nutrition requirements, provide flexibility for busy schedules, and allows for the use of leftovers for future meal preparations.

The grocery list supports a family of four and is split into two weeks; all non-perishable food items are purchased during week one (See Appendix F). The menus are separated by days and meals including breakfast, lunch, dinner, and snacks (See Appendix G). A handout will also be provided with compiled information on budgeting, grocery shopping, and meal preparation tips (See Appendix H). The information will encourage each child to pursue a healthy lifestyle and allow them to easily share the information with their parents and other family members (USDA, 2017a).

Conclusion

The needs assessment for InSports Foundation concluded that having an established nutrition curriculum would ensure that consistent and age-appropriate educational materials and information is being relayed to InSports Day participants. Also, additional support for their grant writing efforts would further the community impact they are able to have by being able to host larger camps and provide more scholarships. Our community service project aligns with InSports Foundation's efforts to address the growing childhood obesity epidemic through nutrition and physical activity. Chapter 4 will evaluate our project implementation following the InSports Day camp event on April 23, 2018. We will evaluate what was accomplished, as well as identify areas for improvement.

Chapter 4: Discussion

Introduction

It has been examined that poor access to nutritious foods and limited opportunities for physical activity is prevalent among children from low-income families. These deficiencies contribute to increasing childhood obesity rates and emphasize the need for early interventions. Establishing nutritional literacy and understanding the importance of an active lifestyle in early childhood can lead to long-term health benefits and reduction in chronic disease later in life (HHS & USDA, 2015; Tsai et al., 2011; Wang et al., 2011). InSports Foundation aims to promote healthy lifestyles by providing children from low-income families with opportunities to engage in physical activity and learn about proper nutrition. It has been demonstrated that similar integrated health programs have led to long-term health benefits and positive behavior changes among children. Therefore, early intervention through integrated health programs are necessary, especially within underserved communities.

Partner Organization

The InSports Foundation has been an official 501c3 non-profit organization since 2013 with the mission of "helping kids get in the game." In four years, the foundation has impacted over 27,000 kids through scholarships, team sponsorships, and InSports Days. InSports Days are free athletic camps that allow underserved children, Kindergarten through eighth grade, to be in a supportive environment that encourages pursuing a healthy lifestyle. In addition to community outreach through various sporting activities, InSports Foundation values cognitive and personal strength and provides goal setting and nutrition education sessions during these camps. The nutrition education curriculum is intended to better equip InSports Foundation staff and interns. In addition, the structured activities InSports Foundation had incorporated into their

InSports Days, they will also be able to present an enhanced nutrition curriculum to camp participants.

As discussed earlier in this document, the InSports Foundation has historically partnered with Matter, another non-profit organization, who has provided camp participants with a healthy snack and nutrition education at no cost; however, Matter is now moving towards requiring a fee for these services. The cost associated with these services will impact the InSports Foundation's budget and subsequently the number of InSports Day Camps, therefore, the partnership between the InSports Foundation and Matter has yet to be determined. InSports Foundation will continue to offer MatterBoxes until a final determination regarding their partnership has been reached.

Problem Statement

Research supports the need for social networks and integrated nutrition and physical activity programs that incorporate all aspects of a child's life, including school curriculum, after-school programs, home environment, and healthy behaviors being modeled by parents or guardians in order to reduce physical inactivity and food insecurity (USDHHS, 2008). The InSports Foundation serves as a comprehensive non-profit organization that addresses many of these issues by providing children from underserved families with access to nutrition education, organized sports activities, and opportunities to learn how to incorporate healthy changes in their daily lives. This is why outreach and education programs, like InSports Foundation, are paramount in addressing the growing incidence of childhood obesity as a direct result of physical inactivity and inadequate nutrition (Bryd-Bredbenner et al., 2013). After partnering with InSports Foundation to assess the needs of the program, it was determined that the existing nutrition curriculum needed revision. The current program was superficial and inconsistently taught. This project endeavored to enhance the existing nutrition curriculum to include health

education that was based upon researched information and interactive activities that would lead to positive dietary changes in underserved kids. By providing the InSports Foundation camp nutrition educators with a more extensive, structured presentation and incorporating interactive activities, the amendments will provide an effective and memorable way to share the researched dietary guidelines.

Acquiring additional revenue was also identified as a need of the program in order to continue to support their outreach efforts. A literature review conducted on physical activity, nutrition, and well-being was provided to InSports Foundation to supplement their grant applications. Following a meeting with a grant writing manager from Bethel University, additional grant writing strategies were also conveyed to the InSports Foundation to further support their grant writing efforts.

Project Implementation

After an extensive review of the current nutrition information published by the USDA, the material was reviewed and critiqued by the EFNEP regional coordinator, Amanda Vanyo, and taught to the founder, co-founder, and program coordinator of InSports Foundation. The education techniques, strategies, and principles presented to the InSports Foundation during the training meeting will be relayed to future InSports Foundations' volunteer nutrition educators. Providing the InSports Foundation nutrition educators with a formal curriculum ensures the information conveyed to the camp participants is effective, consistent, and compatible for InSports Day camps. The EFNEP regional coordinator also shared teaching strategies for working with different ages and education levels, additional games and prop ideas for interactive learning, advisement on language modifications, and additional insight into working with underserved children and their families. An example of a change that was made to the language

includes referring to unhealthy foods as “sometimes” foods versus “bad” foods. The EFNEP regional coordinator shared from previous education experience that use of negative language could potentially introduce unhealthy eating habits, such as eating disorders, and cautioned against using language, such as “bad foods.” This emphasizes the importance of enjoying foods in moderation and not completely eliminating any one food group from a child’s diet.

The EFNEP regional coordinator also highlighted the importance of visual aids while teaching children about food quantities and confirmed that MyPlate should be used consistently for all nutrition-related education and activities. Through incorporating visual aids, the EFNEP regional coordinator has found that they are better able to grasp the children’s attention and educate a diverse group more effectively. The visual props provided within our curriculum, such as the MyPlate diagram, laminated pictures of foods for learning activities, and posters detailing nutrition information will provide education tools to support InSports Foundation reach their camp participants. Additionally, the visual props will be displayed throughout the InSports Day camp to allow the participants an extended length of possible interactions and education.

The education session with the EFNEP regional coordinator provided insight about their experience with the family dynamics within the underserved community they are associated with. The majority of the underserved families are supportive and collaborative with each other and with the EFNEP educators. Realizing the family members of the InSports Day camp participants may be more interactive and supportive, the take-home handouts that were created for the participants may be more useful than initially anticipated. The InSports Foundation nutrition educators can now utilize the support of the participant’s family more reliably and encourage them to utilize and share the information gathered at the InSports Day camp.

In addition to the assistance received on improving the InSports Foundation nutrition education, the meeting between the EFNEP regional coordinator and the InSports Foundation core team members served as a networking opportunity for InSports Foundation as well. The EFNEP regional coordinator shared additional resources and their existing partnerships with InSports Foundation. Going forward, the Insports Foundation will add a link on their homepage for the additional resources presented by the EFNEP regional coordinator, which are specifically for underserved families. Adding this link will make this information more readily available for the underserved population.

Final Results

Information gathered from the meeting between our project team, the InSports Foundation's core team members, and the EFNEP regional coordinator was then integrated into the nutrition education curriculum and provided to InSports Foundation nutrition educators. The material was equipped so the InSports Foundation nutrition educators could immediately present at the InSports Day camps successfully. InSports Foundation also received a hard drive containing the nutrition education curriculum for proper storage and the capability to modify if necessary.

The literature review conducted on physical activity, nutrition, and wellbeing, the pre- and post-nutrition education questionnaire, and the grant writing strategies were also distributed to InSports Foundation to be utilized at their own discretion to supplement their grant writing efforts and support their further projects.

Limitations

This community service project provided significant improvements to the InSports Day camps, however, there were some limitations. One constraint was that there was limited time

spent training the InSports Foundation staff and interns. Training was confined to one day. Ideally, more time would have been spent on training both InSports Foundation staff and volunteer nutrition educators to ensure their understanding of the revised nutrition curriculum and ability to convey the information clearly. Another challenge is that the volunteer nutrition educators are not consistent between each InSports Day camp; however, clear instructions have been included within the nutrition curriculum binder to facilitate consistent teaching of the nutrition education materials during each InSports Day camp. Although our project tried to account for all possible scenarios, not trialing the nutrition education with the InSports Day camp participants prior to its implementation, limits our ability to assess the revised nutrition education curriculum's efficacy and obtain feedback from the InSports Foundation staff.

Further Projects

Although this project was comprehensive in revitalizing InSports Foundation's nutrition program, there are some further projects to consider to further its impact. Currently the program is structured to include a passive learning portion, followed by interactive games. Although the passive learning portion is an efficient way to present the nutrition information to a large number of camp participants, this may not be the most effective or memorable learning style for them. We would propose that if there were more time allocated to the nutrition portion of the camp, the information should be presented in an interactive way.

The nutrition education curriculum was constructed to be easily taught to new volunteer nutrition educators with minimal preparation, regardless of the volunteers' background in health and nutrition knowledge; however, within the program we did not plan a way to collect feedback from the nutrition educators regarding the materials ease of use, clarity, or ability to engage camp participants in learning. A further project would be to obtain feedback from the volunteer

nutrition educators to further revise and improve the nutrition curriculum. It would also be advantageous to provide a more efficient way to collect responses from the campers for the pre- and post-camp questionnaire. We would propose incorporating technology, such as a quick assessment survey on an iPad, to increase response rates and have immediate access to the InSports Day camp participants' feedback and assess any gaps in nutrition knowledge that should have been acquired during the InSports Day camp.

Conclusion

Many integral health programs have been created with the intention of promoting health and nutrition throughout the United States; however, the obesity epidemic still persists. The number of obese children and adolescents has risen by 50 percent over the past two decades (Byrd-Bredbenneret et al., 2013; Lifshitz, 2008). Nutrition and physical activity has been proven to be integral components of childhood growth and development. While hereditary and environmental factors may contribute to higher rates of childhood obesity, poor dietary habits and lack of physical activity have been identified as leading causes for this trend (Byrd-Bredbenner et al., 2013). Underserved communities have demonstrated the need for integral health program and unfortunately face obstacles that limit their access, such as financial constraints, lack of education, and cultural barriers (HHS & USDA, 2015; Tsai et al., 2011; Wang et al., 2011).

Studies have shown that integrated health programs are effective in reducing BMI values and subsequently improving academic performance in children (Hollar et al., 2010; Ritchie et al., 2015). Being that children spend a significant portion of their time at school, educational institutions and after-school programs serve an important role in establishing healthy habits, promoting physical activity, and providing students from food insecure households with access to nutritional foods. This necessitates the need for programs like the InSports Foundation. InSports Foundation not only integrates activity and nutrition in a stimulating, supportive environment, but also focuses on the underserved population, who has limited access to nutritious foods and interactive opportunities (Kirkpatrick et al., 2012). InSports Foundation has proven their dedication and commitment to underserved children in the Twin Cities area through InSports Day camps and scholarships (InSports Foundation, 2013). Through partnership with

the InSports Foundation, the goal of our project was to improve the InSports Day camp experience by providing a more extensive and robust nutrition education curriculum and to help camp participants find tangible ways to apply the information they learned. The modifications made to the nutrition education is based on literature that shows the long-term health benefits of integrated health programs. This project enhanced the nutrition curriculum to include structured lesson plans and interactive educational games based on the dietary guidelines to help underserved kids learn about the importance of eating a healthy diet and how they can make positive dietary changes. The InSports Day camp has been redesigned based upon researched literature to address the growing rates of obesity, but also to encourage positive behavioral changes, academic improvement, self-efficacy, social competence, and improved health outcomes (HHS & USDA, 2015; Jyoti et al., 2005; Tsai et al., 2011; Wang et al., 2011). This project also aided in providing the InSports Foundation with grant writing strategies and an objective measurement tool of the program's efficacy to be used for their prospective grant writing efforts.

By providing an improved nutrition curriculum and support for their grant writing efforts, InSports Foundation will be better equipped to impact the underserved children who participate in their outreach programs. Through the conduction of this project, it was made evident the importance of early intervention and education to establish a healthy, non-sedentary lifestyle. Childhood obesity is a multifactorial problem, not limited to lack of physical activity or poor nutrition. Although addressing these risk factors for obesity can make a difference, there are larger barriers to addressing this epidemic. Childhood obesity is a societal problem, exacerbated by socioeconomic disparity, therefore programs like the InSports Foundation are instrumental in closing the gap.

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APPENDIX A

Permission Letter

Permission Letter

BETHEL UNIVERSITY

Maura Romanshek <mar78362@bethel.edu>

Fwd: InSports Agreement - Bethel

paigebeseman@gmail.com <paigebeseman@gmail.com> Thu, Jan 18, 2018 at 12:08 PM
To: mar78362@bethel.edu, ajk49478@bethel.edu

Sent from my iPhone

Begin forwarded message:

From: Andrew Deters <ADeters@innovativeos.com>
Date: January 18, 2018 at 11:05:05 AM CST
To: "PAIGE BESEMAN (PAIGEBESEMAN@GMAIL.COM)" <PAIGEBESEMAN@GMAIL.COM>
Subject: InSports Agreement - Bethel

On behalf of the InSports Foundation, I, Andrew Deters, give permission to Bethel University Physician Assistant students: Paige Deters, Maura Romanshek, and Allison Kaper, to conduct their Master's Research in accordance with all InSports Foundation events.

Sincerely,

Andrew Deters | Innovative Office Solutions | Account Executive
Tel: 952.698.9492 | Fax: 866.574.5389 | www.innovativeos.com

innovative

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APPENDIX B

Nutrition Curriculum

Nutrition Curriculum

in sports FOUNDATION

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Curriculum Topics

Elementary Education (K-5)

- The Five Food Groups & A Balance Diet
- Sugar
- Fats
- Whole Grains
- Dairy
- Protein
- Healthy Alternatives

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Curriculum Topics

Option One

Materials Needed:

- MyPlate image

---

a. Can anyone identify the five foods groups?
    i. Fruits, Vegetables, Protein, Grains, and Dairy
        1. Show MyPlate image
    ii. It's important to get a balanced meal; eating foods from all five-food group on our plate makes us eat smart and play hard.
b. What foods do you grow in gardens, in trees, or on plants? What food is found in the sea? What foods come from animals?
c. How many fruits and vegetables have we eaten today as a class?
    i. Talk about healthy alternatives
        1. If you like French fries, try sweet potato fries.
        2. If you like lettuce on your sandwich, try baby spinach.
d. What does it mean to eat a nutritious meal?
    i. Eating from all five-food groups gives us the different nutrients we need to grow, play, learn, and be healthy.
    ii. When we don't fuel up with enough of the right kinds of foods, we can't be our best.
        1. Use rocket ship analogy. (A rocket ship can't blast of and soar through space if it doesn't have enough of the right kind of fuel.)
    iii. Foods that many people do not get enough of include: fruits, vegetables, whole grains, low-fat milk and yogurt, and seafood.
    iv. Foods people eat too much of include: candy, cake, cookies, chips, sausages, hot dogs, and ice cream.

Curriculum Topics

Option Two

Materials Needed:

- Sugar Cube Comparison Game (includes 30 cubes with directions below)

---

a. Discuss foods/beverages that have added sugar
   i. Foods: Frosted cereals, cookies, lemonade, candy, muffins, cake, ice cream, regular sodas, fruit punch, sweet tea, sports drinks, some yogurts, and some apple sauces
   ii. Beverages: Sodas and other sweetened beverages
   iii. Why do they add sugar?
      1. To make foods taste better
   iv. Foods with added sugar are "sometimes" foods – we can only eat these some of the time and in small amounts
b. What are some foods that taste sweet WITHOUT added sugar?
   i. Fruits, unsalted popcorn, carrots, cucumbers, hard boiled eggs, nuts, natural peanut butter, plain Greek yogurt, cheese sticks
c. What are some common healthy beverage choices WITHOUT added sugar?
   i. Water, low-fat or fat-free milk, and 100% fruit juice
   ii. Have water at your convenience – reusable water bottles
      1. Kids should have 5-10 glasses (8 ounces) of water a day, especially when they are active or when it's hot outside.
d. What can happen if you eat too much sugar?
   i. Too much sugar may damage your teeth, make you gain unhealthy fat, and take the place of healthier foods that give our bodies what we need to be healthy and get stronger
e. Sugar Cube Comparison Game – Directions: Use the provided bag of sugar cubes to represent how much added sugar is in common food and beverage options (Each sugar cube = 1 tsp or 4g of sugar)
   i. Regular soda = 8 cubes
   ii. Fat-free milk = 0 cubes
   iii. Fat-free chocolate milk = 3 ½ cubes
   iv. 100% orange juice = 0 cubes
   v. Lemonade = 5 ½ cubes
   vi. Two chocolate chip cookies = 1 ½ cubes
   vii. Microwave low-fat popcorn = 0 cubes
   viii. Apple = 0 cubes
   ix. 2 graham cracker squares = 1 cube
   x. Milk chocolate candy bar = 5 cubes
   xi. Pancake syrup (2 Tbsp) = 6 cubes
   xii. Energy Drink = 7 cubes

Curriculum Topics

Option Three

a. Instructor directions:
   i. Compare butter and vegetable oil –
      1. Ask the kids if they know what types of food they are? **Fats.**
      2. Ask to describe the difference between butter and oil? **Liquid versus solid.**
   ii. Demonstrates what happens when a straw is dipped in the oil versus the butter.
      1. Ask them what they notice? **The butter clogs up the end of the straw.**
   iii. Explain how liquid fats are healthier for our hearts than solid fats. Our heart pumps blood through our bodies using little tubes (like straws) called arteries and veins to carry blood to the rest of our body. We need these tubes to be healthy so our body can function well.
   iv. Discuss the foods with solid fats in them and explain how they are "sometimes" foods:
      1. Hot dogs, sausages, bacon, fried chicken, doughnuts, and french fries

Option Four

a. It's important to make at least half of your grains as whole grains, which includes:
   i. Whole-wheat bread, oatmeal, and brown rice versus white rice, bagels, or muffins

Option Five

a. We need about 3 cups of dairy a day for strong bones and teeth
   i. For example: 1-cup of milk or yogurt, 2-cups of cottage cheese, 1-slice of cheese, 1-cup of pudding, 1-cup of frozen yogurt
b. It's important to choose low fat diary options. For example, move to low-fat or fat-free milk, low-fat yogurt, and frozen yogurt instead of ice cream.

Option Six

a. It's important to vary your protein.
   i. Examples of muscle building proteins: fish, eggs, beans, nuts, poultry, seafood, and peas
b. Choose lean or low-fat meat and poultry options:
   ii. Grilled chicken without skin or regular ground beef

Curriculum Topics

Option Seven

a. It's important to focus on healthy snacks and cut back on sweets
b. Healthier alternatives:
    i. Fruits
        1. Apples, bananas, berries, melon, grapes, oranges, peaches, pears, pineapple, plums, mangoes, raisins, or 100% fruit juice.
        2. Fresh, frozen, canned without added juice, and dried fruits are all good choices.
    ii. Vegetables
        1. Broccoli and carrots with low-fat dip, a side salad with dressing, cherry tomatoes, baked potato with salsa, baked sweet or white potato wedges, vegetable soup, or black beans and corn.
    iii. Grain
        1. Whole-wheat crackers, popcorn, brown rice cakes, whole-corn tortilla, a half whole-wheat English muffin, or whole-grain cereal.
    iv. Dairy
        1. Fat-free and low-fat milk, yogurt, frozen yogurt, and cheese.
    v. Protein Foods
        1. Bean dishes (such as chili with kidney beans), seafood (such as tuna canned in water), eggs, chicken or turkey without the skin, lean roast beef, extra lean hamburger meat, lean and lower sodium ham, nut or seed butter (such as peanut butter or sunflower seed butter), or processed soy products (such as veggie burgers)

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Curriculum Topics

Middle School Education (6-8)

- The Five Food Groups & A Balanced Diet
- Sugar
- Fats
- Whole Grains
- Dairy
- Protein
- Sodium
- Caffeine
- Healthy Alternatives

151 Cliff Road East | Burnsville, MN 55337

Curriculum Topics

Option One

Materials Needed:

- MyPlate image
- Healthy Alternatives Game: pictures of taco, burger, and sandwich (Directions below)

---

a. Discuss the five food groups:
    i. Fruits, Vegetables, Protein, Grains, and Dairy
        1. Show MyPlate image
b. Balanced meal
    i. Everything you eat and drink does affect your body's health, growth, and strength.
    ii. Focus on the variety, amount, and nutritional content of all the food you eat or drink
        1. Read labels
            a. Evaluate the nutritional content
            b. Identify the serving
        2. Often restaurant portions are much larger than what is required to meet a person's daily calories requirements.
    iii. Tips to visualize portion sizes
        1. Palm: Fish, meat, and poultry
        2. Thumbnail: Butter, margarine, mayonnaise, and oils
        3. Thumb: Salad dressing, sour cream, cream cheese, peanut butter, and hard cheeses
        4. Fist: Cereal, soup, casseroles, fresh fruit, raw vegetables, or salads
        5. One cupped hand: Pasta, rice, potatoes, cooled vegetables, pudding, and ice cream
        6. Two cupped hands: Chips, crackers, and pretzels
c. Colorful meals
    i. Dark-Green: broccoli, spinach, kale, collard greens, romaine lettuce
    ii. Red and Orange: tomato, carrots, sweet potato, red pepper, butternut squash
    iii. Beans and Peas: black beans, pinto beans, soybeans, lentils, split peas
    iv. Starchy: potatoes, corn, green peas, plantains
    v. Other: avocado, beets, asparagus, mushrooms, celery
d. Healthy Alternatives Game –
    i. Directions: Use the taco, burger, or sandwich pictures
        1. Discuss ways on how to keep them a healthy snack by using healthy alternatives
            a. Add more vegetables, use healthier meat options, and limit the sauces
            b. Try in incorporate ingredients from all five food groups

Curriculum Topics

Option Two

a. Foods with added sugar should be eaten in small amounts
   i. Foods: Frosted cereals, cookies, lemonade, candy, muffins, cake, ice cream, regular sodas, fruit punch, sweet tea, sports drinks, some yogurts, and some apple sauces
   ii. Beverages: Sodas and other sweetened beverages
b. Foods that taste sweet WITHOUT added sugar?
   i. Fruits, unsalted popcorn, carrots, cucumbers, hard boiled eggs, nuts, natural peanut butter, plain Greek yogurt, cheese sticks
c. Healthy beverage choices WITHOUT added sugar?
   i. Water, low-fat or fat-free milk, and 100% fruit juice
   ii. Have water at your convenience – reusable water bottles
      1. Kids should have 5-10 glasses (8 ounces) of water a day, especially when they are active or when it's hot outside.
d. What can happen if you eat too much sugar?
   i. Too much sugar may destroy your teeth, make you gain unhealthy fat, and take the place of the healthier foods you need
e. Sugar Cube Game – Directions: Use the provided bag of sugar cubes to represent how much added sugar is in common food and beverage options (Each sugar cube = 1 tsp or 4g of sugar)
   i. Regular soda = 8 cubes
   ii. Fat-free milk = 0 cubes
   iii. Fat-free chocolate milk = 3 ½ cubes
   iv. 100% orange juice = 0 cubes
   v. Lemonade = 5 ½ cubes
   vi. Two chocolate chip cookies = 1 ½ cubes
   vii. Microwave low-fat popcorn = 0 cubes
   viii. Apple = 0 cubes
   ix. 2 graham cracker squares = 1 cube
   x. Milk chocolate candy bar = 5 cubes
   xi. Pancake syrup (2 Tbsp) = 6 cubes
   xii. Energy Drink = 7 cubes

Curriculum Topics

Option Three

a. Liquid (oil) versus Solid (butter) fats
   i. Liquid fats are healthier for our hearts than solid fats. Our heart pumps blood through our bodies using little tubes called arteries and veins to carry blood to the rest of our body. We need these tubes to be healthy so our body can function well.
   ii. Solid fats are "sometimes" foods:
      1. Hot dogs, sausages, bacon, fried chicken, doughnuts, and french fries

b. Good Fats versus Bad Fats
   i. Tips:
      1. Drink fat-free (skim) or low-fat (1%) milk versus reduced-fat (2%) or whole milk.
      2. Buy lean cuts of meat versus fatty meats or choose these foods less often.
      3. Add low-fat cheese to pizza or pasta, and use low-fat yogurt.
   ii. Good Fats:
      1. Avocados, whole eggs, fish, nuts, olive oil, dark chocolate, and low-fat/Greek yogurt
   iii. Bad Fats:
      1. Cakes, cookies, donuts, pastries, and croissants
      2. Sausages, hot dogs, bacon, and ribs
      3. Ice cream and other dairy desserts
      4. Fried potatoes (French fries)
      5. Regular ground beef and cuts of meat with visible fat
      6. Fried chicken
      7. Whole milk and full-fat dairy foods

Curriculum Topics

Option Four

a. It's important to make at least half of your grains whole grains
b. Grains are divided into 2 groups:
    i. Whole Grains contain the entire grain kernel
        1. Whole-wheat bread, oatmeal, and brown rice
    ii. Refined Grains are milled and processed
        1. This increases the shelf life but also removes dietary fiber, iron, and many vitamins

Option Five

c. About 3 cups of dairy a day are needed for strong bones and teeth
    i. For example, 1-cup of milk or yogurt, 2-cups of cottage cheese, 1-slice of cheese, 1-cup of pudding, 1-cup of frozen yogurt

Option Six

d. It's important to vary your protein with muscle building proteins, including fish, eggs, beans, nuts, poultry, seafood, and peas.
e. Choose lean or low-fat meat and poultry options, such as:
    i. Grilled chicken without skin or regular ground beef
f. Watch for added sodium in processed meats, such as:
    i. Ham, sausage, hotdogs, and deli meat

Option Seven

g. Packaged and prepared foods are common sources of sodium.
    i. Ready-to-eat products, such as frozen dinners, soups, sauces, pizzas, packaged pasta dinners, and prepackaged meat products
    ii. Restaurant meals.
h. A little sodium is needed to stay healthy, but too much can lead to high blood pressure and heart problems.
i. Daily intake of sodium is 2,300 mg/day
    i. Comparisons
        1. One cup of Macaroni and Cheese = 869 mg
        2. Pop Tart (2 pastries) = 330 mg
        3. One Frankfurter Hot Dog = 567 mg
        4. One slice of Pepperoni Pizza = 683 mg
        5. One McDonald's Cheese Burger = 745 mg
    ii. Tips to limit daily sodium intake
        1. Bring a home lunch to school with low sodium options
        2. Load up on fruits and vegetables, which are naturally low in sodium
        3. Look for reduced sodium labels when buying groceries
        4. Limit salad dressing, ketchup, pasta sauces, and other condiments that added sodium

Curriculum Topics

Option Eight

a. Caffeine is naturally in coffee, tea, and cocoa.
b. It's important to identify products that have added caffeine, such as sodas or energy drinks, and limit your daily intake.
    i. Too much caffeine can make your heart work too hard and cause problems.

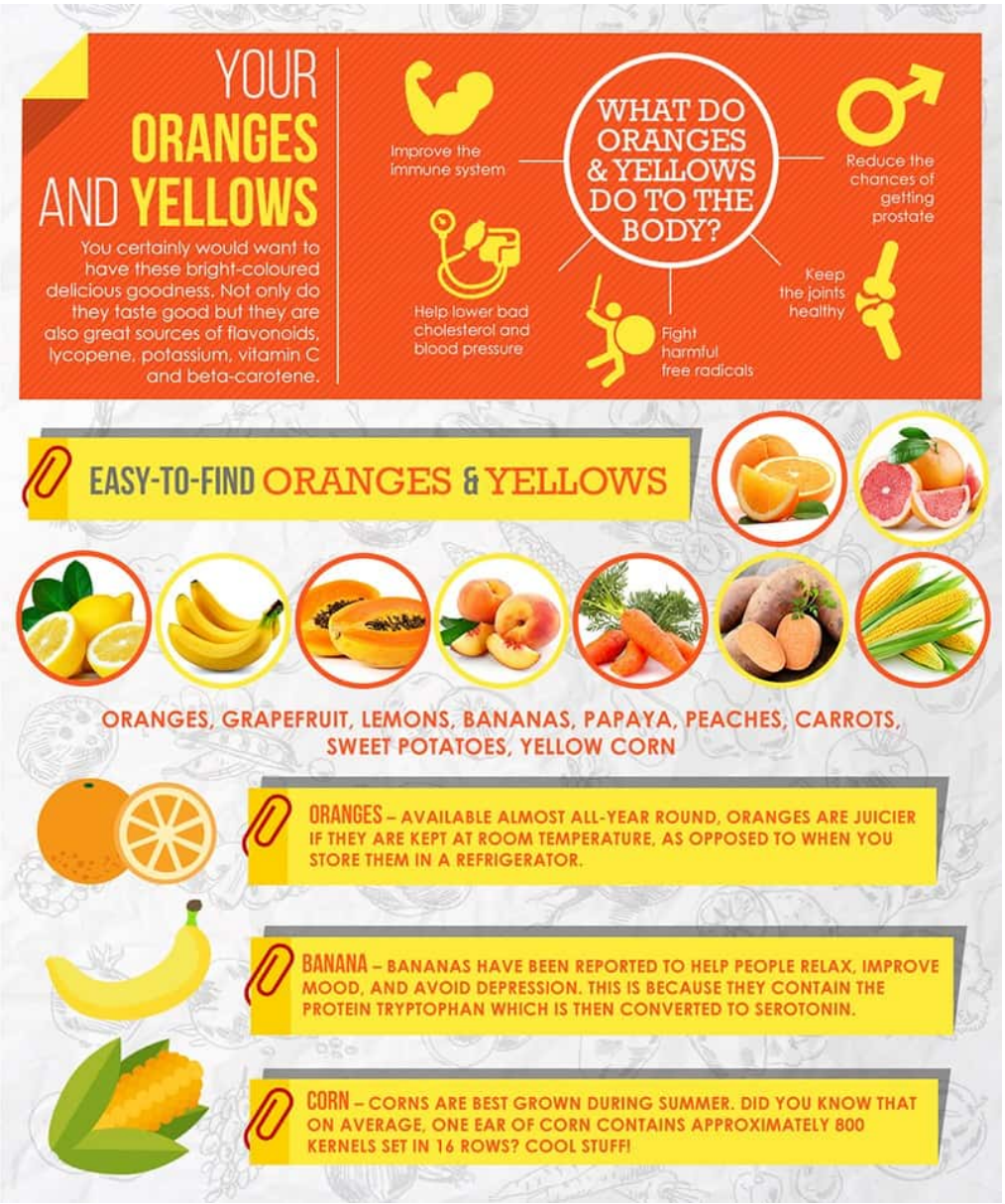
Option Nine

a. Fruits
    ii. Apples, bananas, berries, melon, grapes, oranges, peaches, pears, pineapple, plums, mangoes, raisins, or 100% fruit juice.
    iii. Fresh, frozen, canned in juice, and dried fruits (without added sugars) are all good choices.
b. Vegetables
    iv. Broccoli and carrots with low-fat dip, a side salad with dressing, cherry tomatoes, baked potato with salsa, baked sweet or white potato wedges (prepared with oil), vegetable soup, or black beans and corn.
c. Grain
    v. Whole-wheat crackers, popcorn, brown rice cakes, whole-corn tortilla, a half whole-wheat English muffin, or whole-grain cereal.
d. Dairy
    vi. Fat-free and low-fat milk, yogurt, and cheese.
    vii. Fat-free and low-fat frozen yogurt and ice cream contain less fat than regular ice cream, but may still be high in added sugars.
e. Protein Foods
    viii. Bean dishes (such as chili with kidney beans), seafood (such as tuna canned in water), eggs, chicken or turkey without the skin, lean roast beef, extra lean hamburger meat, lean and lower sodium ham, nut or seed butter (such as peanut butter or sunflower seed butter), or processed soy products (such as veggie burgers)

APPENDIX C

What do Colorful Fruits & Vegetables do to the Body?

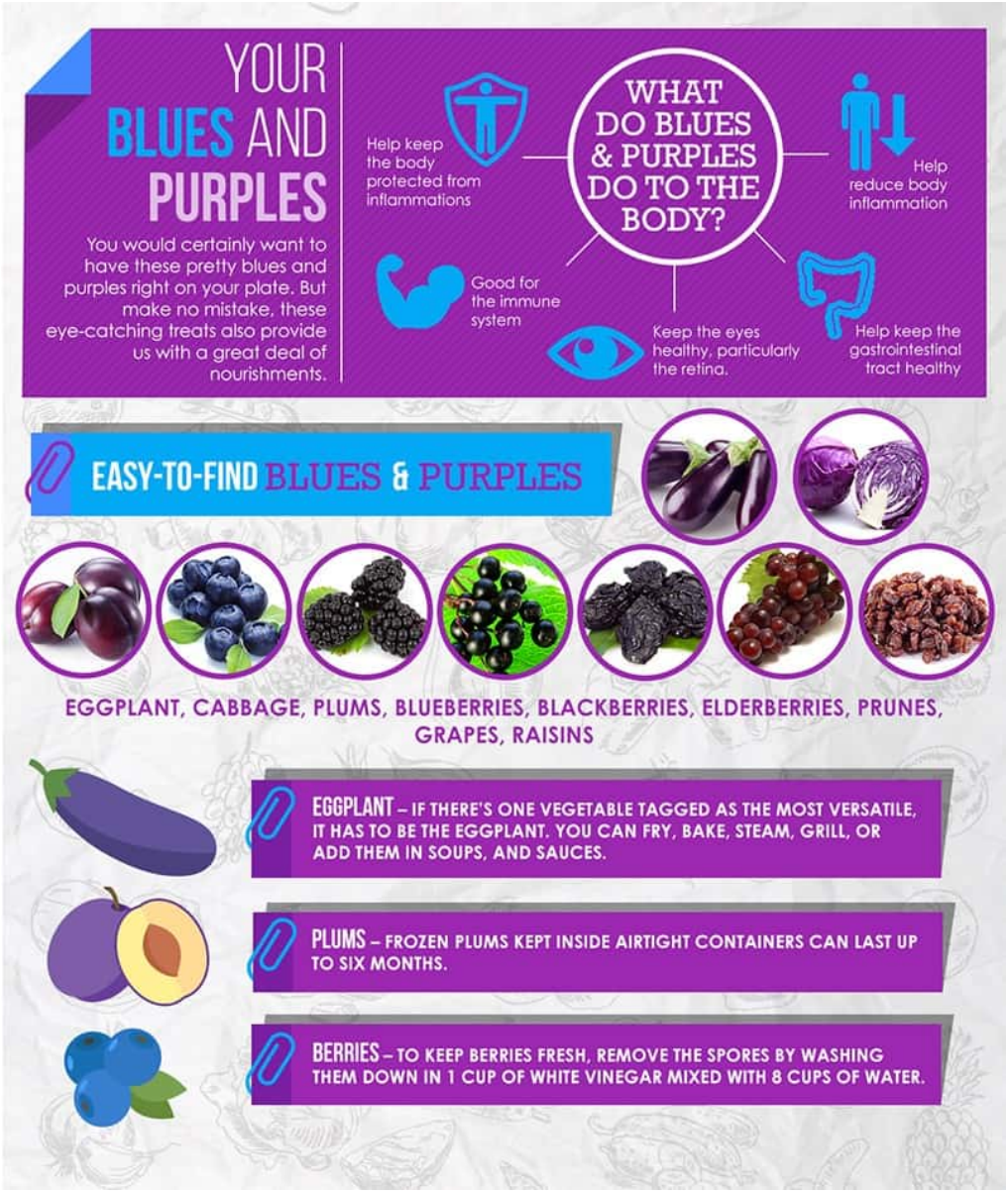
What do Colorful Fruits & Vegetables do to the Body?




FRUIT AND VEGETABLE COLOURS EXPLAINED
YOUR REDS
The vibrant colour of your red fruits and vegetables is not only meant to stimulate your eyes. Red fruits are your number one sources of lycopene, a bright red pigment and phytochemical that helps fight certain types of cancer. Some red fruits and vegetables also contain anthocyanins, a water-soluble pigment that helps control high blood pressure.
WHAT DO REDS DO TO THE BODY?
Slow down aging process; Help protect the body from Alzheimer's
Help lower high blood pressure
Help fight heart diseases
Help guard the body from diabetes
Lower chances of many types of cancer
EASY-TO-FIND SOURCES OF LYCOPENE & ANTHOCYANINS
TOMATO SAUCE, TOMATO PASTE, TOMATO KETCHUP, FRESH TOMATO, SPAGHETTI SAUCE, WATERMELON, STRAWBERRIES, CRANBERRIES, RED ONIONS, RED APPLE, RED CABBAGE
TOMATOES – FRESH TOMATOES ARE MOST ABUNDANT AT THE END OF THE SUMMER. IF YOU GROW YOUR OWN, IT IS ADVISABLE TO PICK THEM WHEN THEY'RE GREEN AND THEN LEFT TO RIPEN.
STRAWBERRIES – THESE VIBRANT-LOOKING FRUITS ARE RICH IN FOLATE, AN ACID THAT HELPS THE BODY TO FIGHT CERTAIN DISEASES SUCH AS ATHEROSCLEROSIS. YOU CAN INCLUDE STRAWBERRIES IN YOUR DIET BY MIXING THEM IN YOUR SALADS OR JUICING THEM.
ONIONS – CARAMELISE, DEEP FRY, BAKE, GRILL—ANY WHICH WAY YOU WANT!


YOUR
GREENS
It goes without saying that green leafy vegetables are packed with nutrients and phytochemicals. Most green-coloured vegetables and fruits contain lutein, a type of carotenoid found in green vegetables and fruits. Some green vegetables also contain one phytochemical called Indoles
WHAT DO GREENS DO TO THE BODY?
Help keep the digestive tract healthy
Help maintain good eyesight
Help keep bones and teeth strong
Improve the immune system
Reduce risk of some cancer types
EASY-TO-FIND SOURCES OF LUTEIN & INDOLES
SPINACH, ROMAINE LETTUCE, BROCCOLI, GREEN PEAS, HONEYDEW, KIWI, KALE, BOK CHOY, ARUGULA, TURNIPS
SPINACH – TASTY BOTH RAW AND COOKED, SPINACH IS YOUR GO-TO GREEN LEAFY VEGETABLE. BESIDES PUTTING THEM IN SALADS, DIPS, AND SOUPS, TRY TURNING THEM INTO A REFRESHING SMOOTHIE.
GREEN PEAS – TO CHECK IF YOUR PEAS ARE READY TO BE PICKED, CHECK BY EYE AND FEEL–POD SHOULD BE ROUND, HAS A SOFT LUSTRE, AND ITS COLOUR IS ALREADY BRIGHT GREEN.
KIWI – WHEN BUYING KIWIS, LOOK FOR THOSE THAT ARE FIRM (BUT NOT HARD) AND DO NOT HAVE ANY BLEMISHES. THESE TREATS GO WELL WITH PRACTICALLY ANY KINDS OF DESSERTS EXCEPT FOR THOSE THAT ARE GELATIN-BASED AS KIWIS HAVE AN ENZYME THAT DOESN'T NOT GO WELL WITH COLLAGEN.


YOUR WHITE
White might not be the most appealing of all colour types but these healthy treats will surely provide you with vitamins and nutrients for an improved health. White-coloured fruits and vegetables contain beta-glucans, Epigallocatechin gallate (EGCG), SDG, and lignans. These nutrients help improve your immune system keeping the body protected from diseases.
WHAT DO WHITES DO TO THE BODY?
Help keep the digestive tract healthy
Reduce the risk of certain types of cancer such as colon, breast, and prostrate.
Lower blood pressure and provide protection against heart diseases
Help balance hormone levels
Help protect you from stroke
EASY-TO-FIND WHITES
CAULIFLOWER, GARLIC, MUSHROOMS, WHITE ONIONS, SHALLOTS, TURNIPS, WHITE CORN, WHITE PEACHES, GINGER
CAULIFLOWER – THE EDIBLE PART OF THE CAULIFLOWER IS CALLED THE CURD. THIS VEGETABLE IS BEST INCLUDED IN SAUTÉED MEAT DISHES OR A SIDE DISH TO STEAKS AND GRILLED MEATS.
MUSHROOM – IT HAS BEEN REPORTED THAT ONE PORTABELLA MUSHROOM CONTAINS MORE POTASSIUM COMPARED TO A BANANA. WHEN BUYING MUSHROOMS, CHOOSE THE DRY ONES AS THESE ARE SURE TO BE FRESH.
TURNIPS – BEST GROWN IN COOL CLIMATES, TURNIPS CAN BE YOUR PERFECT ALTERNATIVE TO CABBAGE WHEN MAKING COLESLAW.


YOUR BLUES AND PURPLES
You would certainly want to have these pretty blues and purples right on your plate. But make no mistake, these eye-catching treats also provide us with a great deal of nourishments.
WHAT DO BLUES & PURPLES DO TO THE BODY?
Help keep the body protected from inflammations
Help reduce body inflammation
Good for the immune system
Keep the eyes healthy, particularly the retina.
Help keep the gastrointestinal tract healthy
EASY-TO-FIND BLUES & PURPLES
EGGPLANT, CABBAGE, PLUMS, BLUEBERRIES, BLACKBERRIES, ELDERBERRIES, PRUNES, GRAPES, RAISINS
EGGPLANT – IF THERE'S ONE VEGETABLE TAGGED AS THE MOST VERSATILE, IT HAS TO BE THE EGGPLANT. YOU CAN FRY, BAKE, STEAM, GRILL, OR ADD THEM IN SOUPS, AND SAUCES.
PLUMS – FROZEN PLUMS KEPT INSIDE AIRTIGHT CONTAINERS CAN LAST UP TO SIX MONTHS.
BERRIES – TO KEEP BERRIES FRESH, REMOVE THE SPORES BY WASHING THEM DOWN IN 1 CUP OF WHITE VINEGAR MIXED WITH 8 CUPS OF WATER.

APPENDIX D

InSports Day Sample Population

InSports Day Sample Population

Brooklyn Junior High in Brooklyn Park, MN is part of the Osseo school district that had participated in a recent InSports Day camp. According to the National Center for Education Statistics (2014), some characteristics of this population include: 44.1% eligible for free lunch due to annual household income of less that $15,171; 13% eligible for reduced lunch due to annual household income; and 42.8% are ineligible for free or reduced lunch. The demographics of Brooklyn Junior High are: White 23.8%, Hispanic 9.2%, Asian 29.6%, Black 31.7%, and American Indian 0.7%. Concerning standardized state testing as of 2015, students from Brooklyn Junior High have a passing grade of 52% in Mathematics and 51% in English Language Arts. This is substantially lower than the average Minnesota middle school passing rates for Mathematics and English Language Arts, which were 60% and 61%, respectively (National Center for Education Statistics, 2014).

APPENDIX E

Energizers

Energizers

UNIVERSITY OF MINNESOTA | EXTENSION

Food Group Movement

AGE/GRADE LEVEL: Youth, Grades 1-5; Teens; Adults and Older Adults

FORMATION: 5 groups, each in a separate area of the room

EQUIPMENT: Food group labels: 5 pieces of paper (color optional) labeled with the following: Grains (orange), Fruits (red), Vegetables (green), Dairy (blue), and Proteins (purple); alternatively 1 game spinner with the food group names or food group colors

RULES/DIRECTIONS:

1. Teacher labels 5 areas of the room with one of the food group labels and assigns one group of students to each area.
2. Teacher calls out the name of a food from a food group either randomly or by spinning the wheel. Teacher also calls out one movement (e.g., jumping, skipping, walking, hopping on one foot, or marching).
3. Participants who are in the named food group move to any other food group area, using the assigned movement. Example: Teacher calls out "broccoli" and "jumping" and participants in the vegetable (green) group jump to any other group.
4. Participants continue the movement in place until another food from their new food group is called. Example: Participants in the above example would continue jumping in place until their new group is called, at which point they would move to a different food group area using the new assigned movement.
5. Once a food from each group is called, all participants should be moving in place.

VARIATION: Works well with University of Minnesota Extension's Go Wild with Fruits & Veggies! curriculum – http://z.umn.edu/gowild. Use paper in Go Wild colors with no labels. Teacher can call:

- The name of a fruit or vegetable.
- Name of a vitamin or phytochemical associated with a specific Go Wild color.
- A trivia question from the Go Wild curriculum.

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UNIVERSITY OF MINNESOTA | EXTENSION

Freeze that Food

AGE/GRADE LEVEL: Youth, Grades 2-5

FORMATION: Standing at desks

EQUIPMENT: None

RULES/DIRECTIONS:

1. Begin by having students do an activity for 30 seconds, standing at their desks. Examples:
   - Jumping
   - Twisting
   - Jogging
   - Jumping Jacks
   - Push-Ups
   - Hopping
2. Teacher calls out a food and the students freeze.
3. Teacher calls on a volunteer to name a healthier form of food and name a benefit of the healthier choice. Examples:

Food	*Healthier choice*	*Benefit*
Flour	Whole grain Flour	Fiber
Butter	Olive oil	Mono unsaturated fat
Whole milk	Nonfat milk	No fat
Fruit juice	100% fruit juice	No sugar added
Candy	Fresh fruit/Veggies	Fiber, no sugar
Soda pop	Water	No sugar, no caffeine
Light green veggie	Dark green veggie	Phytochemicals
French fries	Baked sweet potato fries	Less fat

4. When a student names a healthier form of food and why it's a better choice, students resume activity or begin a new activity that the teacher calls.
5. Steps 2 through 4 are repeated until all students have had a turn or the time is up.

VARIATION: Play music to move; stop music for "freeze."

Teacher calls out "sometimes" food and students name a healthier option.

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UNIVERSITY OF MINNESOTA | EXTENSION

Fruit and Vegetable Line

AGE/GRADE LEVEL: Youth, Grades 2-5

FORMATION: Standing at desks

EQUIPMENT: Fruit and vegetable food models or pictures

RULES/DIRECTIONS:

1. Teacher gives each student a food model or picture.
2. Teacher asks students to line up, in order, by the size of the food in their model or picture.
3. Teacher then asks students to move into groups by a characteristic of the fruit or vegetable, such as color or type – root, stem, flower, or leaf.
4. Once in a group, students act out how their fruit or vegetable would look in a certain situation. Examples:
   - Swaying in the wind
   - In a thunderstorm
   - Weighted down with snow

VARIATION: Use other food groups with appropriate food models or pictures.

NUTRITION NOTE: Use with fruits and vegetables lesson or corresponding lesson if the variation is followed.

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UNIVERSITY OF MINNESOTA | EXTENSION

Go Bananas

AGE/GRADE LEVEL: Youth, Grades K-2

FORMATION: Standing at desks

EQUIPMENT: Food models in a box

RULES/DIRECTIONS:

1. Teacher picks one food model out of the box:
   - For each healthy food drawn, students jump up high.
   - For each "sometimes" food drawn, students squat low.
   - For each fruit drawn, students say "GO BANANAS" and wiggle their bodies in all directions or imitate a monkey.
2. Continue each movement for 15-20 seconds before drawing another food.

NUTRITION NOTE: Use with a healthy snack or healthy food choices lesson.

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UNIVERSITY OF MINNESOTA | EXTENSION

Heart Smart

AGE/GRADE LEVEL: Youth, Grades 2-5

FORMATION: Standing at desks

EQUIPMENT: None; music optional

RULES/DIRECTIONS:

1. Teacher leads a general discussion about the heart. Example:
   - *The heart is located in the left-center chest; it's about the size of your fist. Its function is to deliver blood to the body. Certain types of activities, called cardio or aerobic, are especially good for the heart. Running, playing sports, jumping rope, biking, sledding, and swimming are all good examples. Checking our heart rate tells us if we're working hard enough to benefit our heart.*

2. Teacher leads demonstration of the effects of activity on heart rate:
   - Students check heart rate while resting for 30 seconds, finding pulse either in the wrist or neck and counting the beats.
   - Students record the number and then run in place for 1 to 2 minutes.
   - Students check heart rate and compare. How has it changed? Is your heart working harder when you move? (If not, repeat the test.)

3. Teacher calls out the names of activities that strengthen or weaken the heart. If the activity strengthens the heart, students do 10 jumps. If the activity weakens the heart, students do 5 squats. Upbeat music can be played at this time. Examples:
   - Riding a bike (jump)
   - Eating 4 pepperoni pizzas (squat)
   - Walking your dog (jump)
   - Watching TV (squat)
   - Dancing (jump)
   - Skating (jump)
   - Never eating fruits or vegetables (squat)
   - Shooting hoops (jump)
   - Smoking cigarettes (squat)
   - Jumping rope (jump)
   - Playing PlayStation (squat)

NUTRITION NOTE: Can use with dairy lesson; the heart needs calcium for proper function.

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UNIVERSITY OF MINNESOTA | EXTENSION

Mix it Up Salad!

AGE/GRADE LEVEL: Youth, Grades 2-3

FORMATION: 2 semi-circles facing each other – forming a full circle

EQUIPMENT: Fruit and vegetable food models or pictures

RULES/DIRECTIONS:

1. Give students on one side of the circle a red, green, or yellow food model or picture; give students on other side an orange, blue, or white food model or picture.
2. Teacher calls out a color for each side and students with that color hop to the center of the circle to form a new, small inner circle.
3. Students in the inner circle face out and walk, skip, or hop around the circle one complete time – showing the students in the outer circle their mix of food for the salad.
4. Repeat with new colors to add to the existing salad or start over with new colors.
5. Mix specific fruits and vegetables in a salad; for example, ask students with models or pictures of strawberries and spinach or carrots and apples to hop to the center.
6. Teacher asks students to hop back to their original semi-circles. Repeat the cycle for at least 5 minutes.

VARIATION: Jumping Stir Fry! – Use pictures or models of vegetables and jumping in place (rather than hopping to the center) as the activity.

NUTRITION NOTE: Use with fruit and vegetable lesson.

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UNIVERSITY OF MINNESOTA | EXTENSION

MyPlate Relay

AGE/GRADE LEVEL: Youth, Grades 1-6; Teens

FORMATION: Two or three lines of students, single file; each line is a relay team

EQUIPMENT: 5 sheets of large colored paper, labeled by food group: orange – grains, green – vegetables, red – fruits, blue – dairy, and purple – proteins; a variety of food models or photos from all food groups; optional: laminate the colored paper for durability

RULES/DIRECTIONS:

1. Place food group papers on a table or the floor, several feet away from the start line.
2. Teacher hands a food model or photo to every student.
3. The first student in each relay team runs (or any variety of movement called by the teacher), places their food model or photo on the correct food group paper, and then returns to their team and tags the next student in line.
4. After having a turn, students go to the end of their line and start marching for the rest of the game (to remain active).
5. The first team to finish with their correct food group placements wins.

VARIATION: Food models are placed in plastic buckets at the beginning of each line; once tagged, each student picks out a food to place on the food group posters.

NUTRITION NOTE: Use with food group lesson.

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UNIVERSITY OF MINNESOTA | EXTENSION

Unpack the Groceries

AGE/GRADE LEVEL: Youth, Grades 3-5, Teens, Adults and Older Adults

FORMATION: Standing

EQUIPMENT: Paper grocery bag; timer; food models, names or pictures of food for each food group

RULES/DIRECTIONS:

1. Teacher tells participants to fill grocery bag with items from different food groups. Tell them the bag should contain "anytime" foods (OK to eat any time) and "sometimes" foods (OK to eat only sometimes). Teacher also instructs participants to choose (and announce to the class) any movement or activity for each food and perform it as indicated below.
2. One participant at a time announces a movement or activity and pulls a food out of the bag; the class determines if it's a sometimes or anytime food, and then performs repetitions of the chosen movement:
   - Sometimes food – 20-30 repetitions
   - Anytime food – 10 repetitions
3. Repeat with each participant; allow approximately 5 minutes per food group.

VARIATION: Teacher can pre-assign movements by food group; post for all to see.

NUTRITION NOTE: Accompany with a discussion of "sometimes" foods as more calorie dense, which requires more physical activity.

Can be used to introduce the food groups in MyPlate.

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UNIVERSITY OF MINNESOTA | EXTENSION

What's for Dinner

AGE/GRADE LEVEL: Youth, Grades 2-5; Teens; Adults and Older Adults

FORMATION: Sitting or standing at tables or desks

EQUIPMENT: 1 paper plate per participant; crayons or markers

RULES/DIRECTIONS:

1. Teacher gives each participant one paper plate and crayons or markers, and asks each to draw a nutritious meal.
2. Participants choose (or are assigned) a partner and everyone stands up.
3. One partner holds both plates
4. On teacher's signal, the participants with the plates perform an aerobic activity using the plates as props. Examples:
   - Jogging in place – plates as wings
   - Waving plates up and down in front of body
   - Swimming underwater – plates as fins
   - Jumping jacks, waving plates
5. Teacher identifies one participant performing an aerobic activity and directs the entire class to perform that movement for 10-15 seconds.
6. Switch partners holding plates and repeat until class has performed aerobic activities for at least 5 minutes.
7. Participants return to seats with their own plates and discuss healthy meals and portion sizes.

VARIATION: Set a time limit (1-2 minutes) for drawing on plates.

Use food stickers for creating a healthy plate.

NUTRITION NOTE: Use with portion size lesson or healthy meals lesson.

Use with introduction to MyPlate.

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UNIVERSITY OF MINNESOTA | EXTENSION

Whole Grain Relay

AGE/GRADE LEVEL: Youth, Grades 4-6; Teens; Adults and Older Adults

FORMATION: Relay: Single file lines

EQUIPMENT: 1 box with photos of grain foods and/or grain product food labels; 2 boxes labeled "Whole Grain" and "Not Whole Grain" for each line of participants

RULES/DIRECTIONS:

1. Set box with food photos or labels 10-20 feet from start line; set a "Whole Grain" and "Not Whole Grain" box at each line's start.
2. The first participant in each line walks briskly (or other movement as called by teacher) to the box of food photos/labels and picks one; participant walks briskly back to their line and puts their "food" in either "Whole Grain" or "Not Whole Grain" box.
3. Repeat for 5-10 minutes; participants standing in line can march in place to keep up activity level.
4. The team that finishes first with the most correct items in the boxes wins!

VARIATION: Work in pairs to increase active participants and reduce embarrassment if incorrect choices are made.

Label boxes "High Sodium" and "Low Sodium," accompany with lesson on sodium levels.

NUTRITION NOTE: Use with whole grain, sodium, or label reading lesson.

APPENDIX F

Sample 2-Week Budget Grocery List

Sample 2-Week Budget Grocery List

Sample Menus—Week 1 Grocery List

Amounts for a Family of 4 used in Week 1 menu, listed as shown in menu and in common purchase units.

Fresh/Refrigerated Foods:

Fruits/Vegetables

- ☐ Banana, 20 bananas (about 4 bunches)
- ☐ Apple, 8 medium
- ☐ Orange, 12 large
- ☐ Lemon, 2 medium
- ☐ Grapes, 1.5 lbs
- ☐ Celery, 1 bunch
- ☐ Carrots, 1.5 lbs (about 5 cups)
- ☐ Cucumbers, 2 medium
- ☐ Tomatoes, 4 medium
- ☐ Green pepper, 1 medium
- ☐ Red pepper, 1 medium
- ☐ White potatoes, 8 lbs
- ☐ Garlic, fresh, 2 cloves
- ☐ Onion, 3 medium
- ☐ Green cabbage, 2 lbs
- ☐ Romaine lettuce, 2 lbs

Protein Foods

- ☐ Chicken, 4 lbs, chicken parts (thighs, legs, etc.)
- ☐ Chicken, 1 lb raw, boneless (to make 2 cups cooked)
- ☐ Lean (92% lean 8% fat) ground beef, 1 lb
- ☐ Beef round steak, 0.75 lbs
- ☐ Turkey sausage, reduced fat, 8 links (5.25 oz)
- ☐ Fish fillets, 2 lbs
- ☐ Tofu, firm, 20 oz
- ☐ Pork chop, lean, bone-in, 20 oz
- ☐ Egg, large, 3 dozen
- ☐ Hummus, 8.5 oz

Dairy Foods

- ☐ Lowfat milk (1%), 5 gal
- ☐ Plain yogurt, nonfat, ¾ cup (6 oz)
- ☐ Vanilla yogurt, lowfat, 6 cups (48 oz)
- ☐ Cheddar cheese, shredded, 2 ¼ cups (9 oz)

Breads

- ☐ 8" Tortilla, whole wheat, 8 (14.5 oz)
- ☐ Roll, white, 8 (12.5 oz)
- ☐ Whole wheat bread, sliced, 44 slices (about 2 long loaves)
- ☐ English muffins, 4

Other

- ☐ Margarine, tub, 9.5 oz

Frozen Foods:

Fruits/Vegetables

- ☐ 100% Apple juice concentrate, 24 oz
- ☐ 100% Orange juice concentrate, 12 oz
- ☐ Corn, 2 cups (10 oz)
- ☐ Peas, 4 cups (19 oz)
- ☐ Broccoli, 4 cups (22 oz)
- ☐ Green beans, 8 cups (35 oz)
- ☐ Mixed vegetables, 4 cups frozen (19.5 oz)

Pantry and Canned Foods:

Fruit/Vegetables

- ☐ Raisins, 1.25 cups (7.25 oz)
- ☐ Pears, in 100% juice, 2 cups (29 oz)
- ☐ Tomato sauce, low-sodium, 15 oz
- ☐ Tomatoes, low-sodium, diced, 43.5 oz
- ☐ Corn w/sweet peppers, 11 oz
- ☐ Green chiles, 7 oz
- ☐ Salsa, 1¼ cups (11 oz)

Protein Foods

- ☐ Lentils, dry, 16 oz
- ☐ Tuna fish, canned in water, 24 oz
- ☐ Almonds, ¼ cup chopped (1 oz)
- ☐ Walnuts, 6 Tbsp (1.5 oz)

Grains, Pasta, Cereal, Crackers

- ☐ Brown rice, dry, 4 cups (27 oz)
- ☐ Spaghetti, dry, 5 oz
- ☐ Couscous, dry, 1 cup (6 oz)
- ☐ Oats, rolled, 6 cups (17 oz)
- ☐ Toasted oat cereal, 5 cups (5 oz)
- ☐ Whole grain crackers, 24 (4 oz)
- ☐ Pretzels, 2 cups (3 oz)

Other

- ☐ Chocolate chips, ½ cup (3 oz)
- ☐ Pudding mix, vanilla, 3.4 oz
- ☐ Parmesan cheese, shredded, 1 cup (3.

Note: Some items used in both weeks 1 and 2; amount shown is for week 1 ONLY; totally amount of non-perishables for both weeks may be purchased together.

Sample Menus—Week 2 Grocery List

Amounts for a Family of 4 used in Week 2 menu, listed as shown in menu and in common purchase units.

Fresh/Refrigerated Foods:

Fruits/Vegetables

- ☐ Banana, 19 bananas (about 4 bunches)
- ☐ Orange, 8 large
- ☐ Lemon, 1 medium
- ☐ Carrots, 2.5 lbs (about 8 cups)
- ☐ Cucumbers, 4 medium
- ☐ Tomatoes, 7 medium
- ☐ Green pepper, 1 medium
- ☐ Red pepper, 2 medium
- ☐ Sweet potatoes, 4 small
- ☐ White potatoes, 4 lbs
- ☐ Garlic, fresh, 5 cloves
- ☐ Onion, 3 medium
- ☐ Romaine lettuce, 1 lb
- ☐ Spinach, fresh, 1 lb
- ☐ Fresh parsley, 5 Tbsp (1/8 bunch)
- ☐ Fresh cilantro, ¼ cup (1/4 bunch)

Protein Foods

- ☐ Chicken, 2 lbs raw, boneless (to make, 1¼ lb cooked)
- ☐ Lean (92% lean 8% fat) ground beef, 1.5 lbs
- ☐ Turkey sausage, reduced fat, 8 links (5.25 oz)
- ☐ Tofu, firm, 14 oz pkg
- ☐ Pork chop, boneless, 14 oz
- ☐ Roast beef, deli meat, 0.5 lb. (8 oz)
- ☐ Egg, large, 2 cartons (dozen)

Dairy Foods

- ☐ Lowfat milk (1%), 4 gal
- ☐ Vanilla yogurt, lowfat, 3 cups (24 oz)
- ☐ Cheddar cheese, reduced fat, 2 ½ cups (10 oz)

Breads

- ☐ 8" Tortilla, whole wheat, 4 (7.25 oz)
- ☐ 6" corn tortilla, 6 (6 oz)
- ☐ Roll, white, 12 (18.25 oz)
- ☐ Whole wheat bread, sliced, 56 slices (about 3 loaves or 56 oz)

Other

- ☐ Margarine, tub, 6 oz

Frozen Foods:

Fruits/Vegetables

- ☐ 100% Apple juice concentrate, 24 oz
- ☐ 100% Orange juice concentrate, 12 oz
- ☐ Peas, 4 cups (19 oz)
- ☐ Green beans, 2 cups (9 oz)
- ☐ Hash brown potatoes, 2 cups (15 oz)
- ☐ Lima beans, 1 cup (7 oz)

Pantry/Canned Foods:

Fruit/Vegetables

- ☐ Raisins, 2 cups (12 oz)
- ☐ Applesauce, unsweetened, 1½ cups (13 oz)
- ☐ Pineapple, chunks, in 100% fruit juice, 2 cups (18 oz)
- ☐ Tomatoes, low-sodium, diced, 43.5 oz
- ☐ Mixed vegetables, low-sodium, 15 oz
- ☐ Corn, 15.2 oz
- ☐ Green chiles, 4 oz
- ☐ Salsa, ½ cup (5 oz)
- ☐ Pumpkin, ½ cup (4.5 oz)

Protein Foods

- ☐ Salmon, canned, 12 oz
- ☐ Tuna fish, canned in water, 24 oz
- ☐ White beans, dry, 1 lb. (16 oz)
- ☐ Kidney beans, low-sodium, 5.5 oz
- ☐ Walnuts, 6 Tbsp (1.5 oz)

Grains, Pasta, Cereal, Crackers

- ☐ Brown rice, dry, 2 cups (14 oz)
- ☐ Egg noodles, dry, 5 oz
- ☐ Fusilli pasta, dry, 8 oz
- ☐ Oats, rolled, 5¾ cups (16.5 oz)
- ☐ Toasted oat cereal, 9 cups (9 oz)
- ☐ Graham crackers, 16 (4 oz)
- ☐ Whole grain crackers, 24 (4 oz)

Other

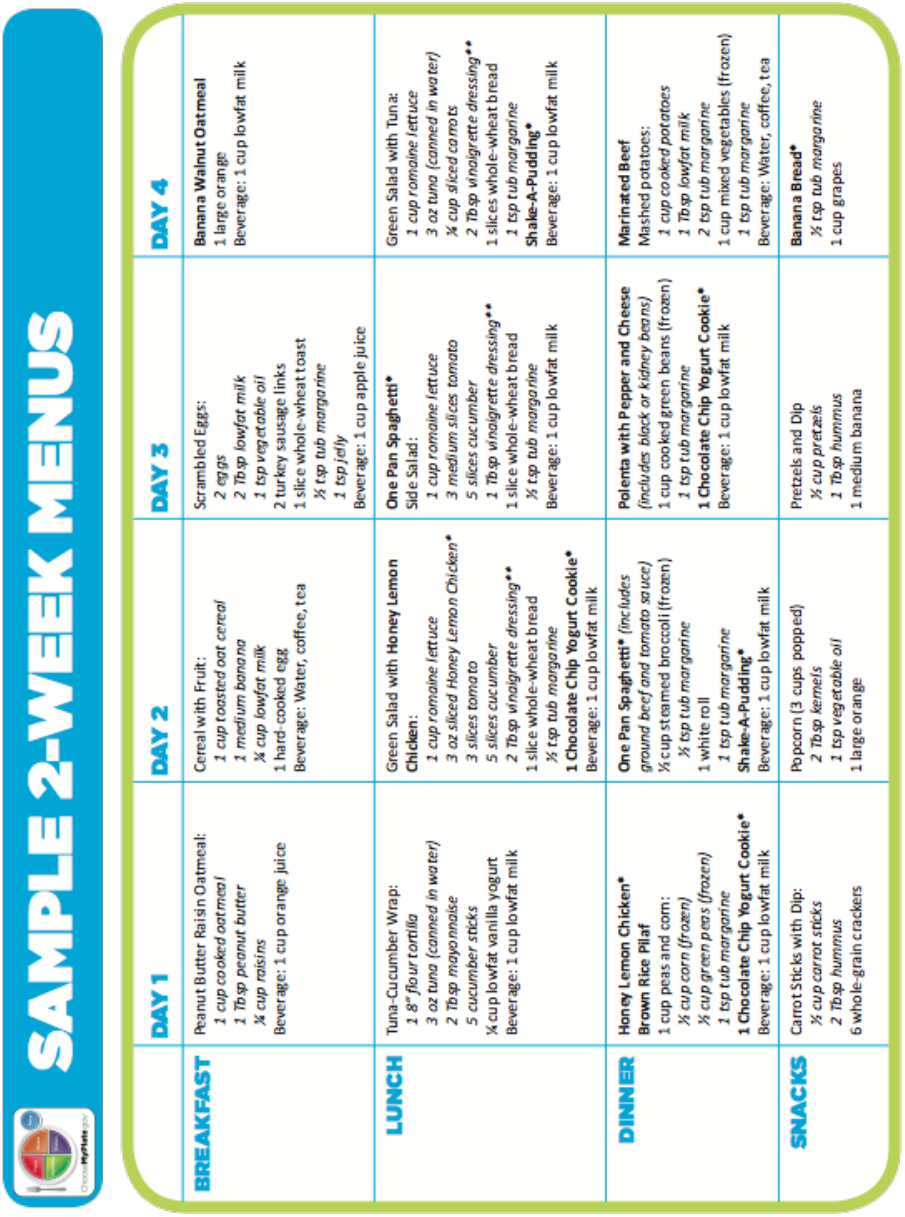
- ☐ Cream of mushroom soup, low-sodium, 10 oz
- ☐ Chicken broth, low-sodium, 14.5 oz
- ☐ Pudding mix, chocolate, 3.4 oz
- ☐ Ranch dressing, 8.3 oz
- ☐ Parmesan cheese, shredded, 2/3 cup (2.25 oz)

Note: Some items used in both weeks 1 and 2; amount shown is for week 1 ONLY; totally amount of non-perishables for both weeks may be purchased together.

APPENDIX G

Sample 2-Week Menu

Sample 2-Week Menu



SAMPLE 2-WEEK MENUS

	DAY 1	DAY 2	DAY 3	DAY 4
BREAKFAST	Peanut Butter Raisin Oatmeal: *1 cup cooked oatmeal* *1 Tb sp peanut butter* *¼ cup raisins* Beverage: 1 cup orange juice	Cereal with Fruit: *1 cup toasted oat cereal* *1 medium banana* *¼ cup lowfat milk* 1 hard-cooked egg Beverage: Water, coffee, tea	Scrambled Eggs: *2 eggs* *2 Tb sp lowfat milk* *1 tsp vegetable oil* 2 turkey sausage links 1 slice whole-wheat toast *½ tsp tub margarine* *1 tsp jelly* Beverage: 1 cup apple juice	**Banana Walnut Oatmeal** 1 large orange Beverage: 1 cup lowfat milk
LUNCH	Tuna-Cucumber Wrap: *1 8" flour tortilla* *3 oz tuna (canned in water)* *2 Tb sp mayonnaise* *5 cucumber sticks* ¼ cup lowfat vanilla yogurt Beverage: 1 cup lowfat milk	Green Salad with **Honey Lemon Chicken**: *1 cup romaine lettuce* *3 oz sliced Honey Lemon Chicken** *3 slices tomato* *5 slices cucumber* *2 Tb sp vinaigrette dressing*** 1 slice whole-wheat bread *½ tsp tub margarine* **1 Chocolate Chip Yogurt Cookie*** Beverage: 1 cup lowfat milk	**One Pan Spaghetti*** Side Salad: *1 cup romaine lettuce* *3 medium slices tomato* *5 slices cucumber* *1 Tb sp vinaigrette dressing*** 1 slice whole-wheat bread *½ tsp tub margarine* Beverage: 1 cup lowfat milk	Green Salad with Tuna: *1 cup romaine lettuce* *3 oz tuna (canned in water)* *¼ cup sliced carrots* *2 Tb sp vinaigrette dressing*** 1 slices whole-wheat bread *1 tsp tub margarine* **Shake-A-Pudding*** Beverage: 1 cup lowfat milk
DINNER	**Honey Lemon Chicken*** **Brown Rice Pilaf** 1 cup peas and corn: *½ cup corn (frozen)* *½ cup green peas (frozen)* *1 tsp tub margarine* **1 Chocolate Chip Yogurt Cookie*** Beverage: 1 cup lowfat milk	**One Pan Spaghetti*** *(includes ground beef and tomato sauce)* ½ cup steamed broccoli (frozen) *½ tsp tub margarine* 1 white roll *1 tsp tub margarine* **Shake-A-Pudding*** Beverage: 1 cup lowfat milk	**Polenta with Pepper and Cheese** *(includes black or kidney beans)* 1 cup cooked green beans (frozen) *1 tsp tub margarine* **1 Chocolate Chip Yogurt Cookie*** Beverage: 1 cup lowfat milk	**Marinated Beef** Mashed potatoes: *1 cup cooked potatoes* *1 Tb sp lowfat milk* *2 tsp tub margarine* 1 cup mixed vegetables (frozen) *1 tsp tub margarine* Beverage: Water, coffee, tea
SNACKS	Carrot Sticks with Dip: *½ cup carrot sticks* *2 Tb sp hummus* 6 whole-grain crackers	Popcorn (3 cups popped) *2 Tb sp kernels* *1 tsp vegetable oil* 1 large orange	Pretzels and Dip *½ cup pretzels* *1 Tb sp hummus* 1 medium banana	**Banana Bread*** *½ tsp tub margarine* 1 cup grapes

SAMPLE 2-WEEK MENUS

	DAY 5	DAY 6	DAY 7	DAY 8
BREAKFAST	Open-faced Egg and Tomato on an English Muffin *2 eggs, fried in 1 tsp oil* *1 English muffin, toasted* *2 medium slices tomato* *¼ cup cheddar cheese, shredded* Beverage: 1 cup apple juice	**Scrambled Tofu** Burrito *1 serving Scrambled Tofu* *1 8" flour tortilla* *¼ cup black beans (canned)* *2 Tbsp salsa* Beverage: 1 cup lowfat milk	**Fantastic French Toast** *1 Tbsp pancake syrup* *1 tsp tub margarine* *Dash of cinnamon (optional)* 1 medium banana Beverage: 1 cup orange juice	Raisin Oatmeal: *1 cup cooked oatmeal* *1 Tbsp raisins* 1 medium banana *1 Tbsp peanut butter* Beverage: 1 cup lowfat milk
LUNCH	Peanut Butter and Banana Sandwich: *2 slices whole-wheat bread* *2 Tbsp peanut butter* *1 medium banana* ½ cup celery sticks Beverage: 1 cup lowfat milk	**Crunchy Chicken Salad** Sandwich: *2 slices whole-wheat bread* *¾ cup* **Crunchy Chicken Salad** *1 romaine lettuce leaf* ½ cup carrot sticks *1 Tbsp Ranch dressing* 1 large orange Beverage: 1 cup lowfat milk	**Lentil Stew*** 1 cup brown rice 1 slice whole-wheat bread *½ tsp tub margarine* Beverage: 1 cup lowfat milk	Tuna Sandwich: *2 slices whole-wheat bread* *3 oz tuna (canned in water)* *2 Tbsp mayonnaise* *2 medium slices tomato* *1 romaine lettuce leaf* 10 cucumber slices *1 Tbsp Ranch dressing* Beverage: 1 cup lowfat milk
DINNER	**Mouth-Watering Oven-Fried Fish** **Couscous with Peas and Onions** 1 cup green beans (frozen) 1 white roll *1 tsp tub margarine* Beverage: Water, coffee, tea	**Lentil Stew*** 1 cup brown rice ½ cup broccoli (frozen) *½ tsp tub margarine* ½ cup canned pears Beverage: Water, coffee, tea	Pan-fried Pork Chop (5 oz raw chop with bone) 1 medium baked potato *2 Tbsp salsa* Cabbage slaw *½ cup shredded green cabbage* *1 Tbsp vinaigrette dressing*** Beverage: 1 cup apple juice	**Red Hot Fusilli Pasta** *2 Tbsp shredded Parmesan cheese* ½ cup green peas (frozen) *½ tsp tub margarine* 1 white roll *1 tsp tub margarine* **Apple Cinnamon Bar*** Beverage: Water, coffee, tea
SNACKS	**Banana Bread*** *½ tsp tub margarine* 1 cup lowfat milk	Yogurt Parfait: *¼ cup lowfat vanilla yogurt* *¼ cup toasted oat cereal* *1 Tbsp chopped nuts* *1 Tbsp raisins*	**Banana Bread*** *½ tsp tub margarine* 1 cup lowfat milk	1 large orange 2 graham crackers 1 cup lowfat milk

SAMPLE 2-WEEK MENUS

	DAY 9	DAY 10	DAY 11	DAY 12
BREAKFAST	Sausage Omelet: *2 eggs* *2 Tbsp lowfat milk* *1 tsp vegetable oil* *1 turkey sausage link, diced* *¼ cup cheddar cheese, shredded* ½ cup hash brown potatoes (frozen) *Cooked in 1 tsp vegetable oil* Beverage: 1 cup orange juice	Cold Cereal: *1 cup toasted oat cereal* *1 medium banana* *¾ cup lowfat milk* 1 slice whole-wheat toast *1 Tbsp peanut butter* Beverage: Water, coffee, tea	**Breakfast Burrito with Salsa** 1 slice whole-wheat toast *½ tsp tub margarine* *1 tsp jelly* Beverage: 1 cup apple juice	1 cup toasted oat cereal *¾ cup lowfat milk* Scrambled Egg with Salsa: *1 egg* *1 Tbsp lowfat milk* *½ tsp vegetable oil* *1 Tbsp salsa* Beverage: 1 cup apple juice
LUNCH	Peanut Butter and Jelly Sandwich: *2 slices whole-wheat bread* *2 Tbsp peanut butter* *2 tsp jelly* 1 cup sliced apple *½ cup carrot sticks* 1 Tbsp Ranch dressing Beverage: 1 cup lowfat milk	Green Salad with Salmon: *1 cup romaine lettuce* *3 oz salmon (canned)* *2 medium slices tomato* *4 slices cucumber* *2 Tbsp vinaigrette dressing*** 6 whole-grain crackers Beverage: 1 cup lowfat milk	Roast Beef Sandwich: *2 slices whole-wheat bread* *2 oz lean roast beef (deli meat)* *2 slices tomato* *1 romaine lettuce leaf* *1 Tbsp mayonnaise* ½ cup carrot sticks 1 cup sliced apple *1 Tbsp peanut butter* Beverage: Water, coffee, tea	**White Chili*** Side Salad: *¼ cup romaine lettuce* *¼ cup chopped carrot* *1 Tbsp vinaigrette dressing*** 1 slice whole-wheat bread *½ tsp tub margarine* Beverage: 1 cup lowfat milk
DINNER	**Quick Tuna Casserole** ½ cup green beans (frozen) *½ tsp tub margarine* 1 white roll *1 tsp tub margarine* **Apple Cinnamon Bar*** Beverage: Water, coffee, tea	**Honey Mustard Pork Chops** 1 medium baked potato *1 tsp tub margarine* ½ cup shredded green cabbage *Sauteed in ½ tsp vegetable oil* 1 white roll *1 tsp tub margarine* **2 Applesauce Cookies*** Beverage: Water, coffee, tea	**White Chili*** **Herbed Vegetables** 1 small sweet potato, baked *½ tsp tub margarine* ½ cup chocolate pudding (prepared from a dry mix) Beverage: 1 cup lowfat milk	**Misickquatash** (Indian Succotash with ground beef) Mashed potatoes: *1 cup cooked potatoes* *1 Tbsp lowfat milk* *2 tsp tub margarine* 1 slice whole-wheat bread *½ tsp tub margarine* Beverage: 1 cup lowfat milk
SNACKS	Peanut Butter on Banana: *1 medium banana* *1 Tbsp peanut butter* 1 cup lowfat milk	2 graham crackers 1 cup lowfat milk	**Apple Cinnamon Bar*** 1 cup lowfat milk	**2 Applesauce Cookies*** ½ cup canned pineapple chunks

SAMPLE 2-WEEK MENUS

	DAY 13	DAY 14
BREAKFAST	**Banana Walnut Oatmeal** 1 hard-boiled egg Beverage: 1 cup orange juice	**Perfect Pumpkin Pancakes** *2 Tbsp pancake syrup* 1 turkey sausage link 1 medium banana Beverage: 1 cup apple juice
LUNCH	**Tofu Salad** Sandwich: *2 slices whole-wheat bread* *¼ cup **Tofu Salad*** *2 slices tomato* *1 romaine lettuce leaf* ½ cup carrot sticks *1 Tbsp Ranch dressing* **Apple Cinnamon Bar*** Beverage: 1 cup lowfat milk	**Easy Red Beans and Rice*** *¼ cup cheddar cheese, shredded* Side Salad: *¼ cup romaine lettuce* *4 slices cucumber* *¼ cup chopped carrot* *1 Tbsp vinaigrette dressing*** 1 slice whole-wheat bread *½ tsp tub margarine* Beverage: 1 cup lowfat milk
DINNER	**Easy Red Beans and Rice*** *¼ cup cheddar cheese, shredded* **Lemon Spinach** 1 large orange Beverage: 1 cup lowfat milk	**Manly Muffin Meatloaf** Mashed potatoes: *1 cup cooked potatoes* *1 Tbsp lowfat milk* *2 tsp tub margarine* ½ cup green peas (frozen) *½ tsp tub margarine* Beverage: 1 cup lowfat milk
SNACKS	Yogurt Parfait: *¼ cup lowfat vanilla yogurt* *¼ cup toasted oat cereal* *1 Tbsp chopped nuts* *1 Tbsp raisins*	Popcorn (3 cups popped) *2 Tbsp kernels* *1 tsp vegetable oil* **Yogurt Pop**

* Bolded recipes are from What's Cooking? USDA Mixing Bowl, and those with a star make 8 or more servings. These recipes are used two or more times in these menus. Prepare the entire recipe on the first day it appears and eat the remaining portions as noted on the following days.

**Homemade vinaigrette salad dressing. To make about 4 Tbsp of the dressing, mix:
3 Tbsp vegetable oil (canola, olive, soybean, etc.)
1 Tbsp vinegar (cider, wine, or balsamic)
¼ tsp mustard (yellow, Dijon, or brown)
¼ tsp sugar
Optional: black pepper, dried herbs to taste

Notes:

- Italicized foods are part of the dish or food that precedes it.
- Unless indicated, all beverages are unsweetened.
- To keep sodium amounts within recommended limit, use salt only as specified in recipes, not in cooking other foods or at the table.
- Be sure to follow food safety guidelines when preparing and cooking food. Tips for keeping food safe can be found at www.foodsafety.gov.

APPENDIX H

Take Home Healthy Eating Handout

Take-Home Healthy Eating Handout

INSPORTS DAY APRIL 23, 2018

Healthy Eating

On a Budget

Healthy eating as a family

Establishing healthy eating habits is important for your child's health and development.

Purchasing healthy food does not need to be costly or complicated. Start by making small changes and introducing your family to healthier food options over time. This flyer identifies several ways to incorporate healthier foods into your family's diet and highlights ways to save money.

1. Plan weekly meals and shop from a grocery list for big savings.
2. Purchase store brands. These are the same quality as name brands but cost less.
3. Use coupons or join free store loyalty programs for additional savings.

Eat before you shop.
Doing so reduces impulse purchases or check-out-aisle munchies.

Buy in bulk
Stock up on healthy non-perishable items when they are on sale.

Keep it simple
Focus on healthy meals that are simple to prepare.

Tips for saving money at the grocery store

Purchase fruits and vegetables that are in season. To identify which items are in season, go to the United States Department of Agriculture and search for the Seasonal Produce Guide.

Freeze produce if it is nearing its expiration, as these may be added to soups and smoothies at a later date.

Identify less expensive options. For example:

- Purchase a green pepper for $0.79, versus a red bell pepper for $1.79.
- Frozen fruits and vegetables are less expensive than fresh produce and do not contain the added salt and sugar that is often found in canned varieties.
- Uncut produce is less expensive than the pre-cut option.

Shop alone. When family members accompany you, additional food items often get added to the cart.

Meal planning and buying smaller quantities of fresh produce reduces the amount of food wasted.

INCLUDE YOUR KIDS IN MEAL PLANNING AND PREPARATION

Children are more likely to eat meals they have helped prepare. This also teaches them the importance of home-cooked meals. Here are some ways into include children in meal preparation:

- Wash fruits and vegetables
- Tear lettuce or cut vegetables (age-dependent)
- Mix ingredients together
- Gather ingredients for a recipe
- Measure ingredients (flour, spices, vegetables, etc.)