

Research Article

Physical Fitness and Activities of the Subanen Children

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Abstract

Physical activity is one of the most fundamental functions and needs which benefit a long life. Engaging in regular physical activity is very important in one's daily life as it helps improve one's level of fitness and health. This study aimed to identify the Body Mass Index (BMI), household chores, and physical activities of the Subanen (indigenous group) children in three (3) schools in Ozamiz City, Misamis Occidental, and Philippines who were pure-blooded Subanen children aged 9-12 years old. A descriptive research design and a researcher-made checklist were used and a t-test was also utilized to determine if there was a significant difference in the performance of the respondents before and after implementing the Physical Fitness Program. During the pre-assessment, all respondents were underweight, and health-related fitness activities were performed well by the respondents compared to the skill-related fitness activities. Feeding and fitness programs were designed based on its assessment, and most of the respondents passed the Post-Physical Fitness Test. There is a low significant difference between the Pre-test and Post-test performance of the respondents. The researchers concluded that proper nutrition and constant training would help improve one's physical activity performance. It is recommended that parents, teachers, and even the Subanen community leaders encourage themselves to come up with varied physical activities and promote healthy eating habits among the Subanen children.

Keywords: Body mass index; Household chores; Physical activities; Physical fitness; Subanen

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Introduction

Today, as quality of life has improved, people increasingly pay more attention to their personal health and development. The Centers for Disease Control and Prevention (CDC) [1], reported that people who are physically active for about 150 minutes a week will have a 33% lower risk of all-cause mortality than those who are physically inactive. Physical activity is very important as it provides long-term health benefits for everyone. Physically active people are less likely to gain weight throughout their lives and are more likely to have a lower prevalence of obesity. Physical activity refers to all energy expended by the movement, any body movement that results in energy expenditure above the resting level [2].

Physical fitness activity is important for weight control, using energy, and maintaining muscle mass. It is effective in dietary management for avoiding weight gain or losing weight. Children engaging in physical activities like running, playing soccer, basketball, and badminton can improve their cardiovascular endurance and increase their immune system. The importance of engaging in physical activity at an early age improves motor learning and social skills [3].

A lifestyle with physical activity and proper nutrition is important to the overall quality of life of a person. Physical activity and nutrition are essential to a healthy body and mind. It is also an element in the proper function and development of a person. Moreover, it has a big role in the prevention and control of chronic diseases. According to Beck et al. [4], proper nutrition and appropriate physical activity help improve body physique, increase the level of energy, and develop a stronger immune system. Proper nutrition is important to one's life; this helps fight off infection and enables the body to function the body well.

Most of the industrialized countries achieve insufficient levels of physical fitness activity. Blair [5], states that physical inactivity is one of the most important public health problems of the 21st century, and maybe even the most important. Poor lifestyle activities today lead to obesity and everyone may have this kind of condition which is quite serious and alarming. The world's health of children and adults is now critical; this condition is now considered a disease according to the World Health Organization (WHO). Furthermore, in 2016 the WHO listed that physical inactivity is one of the 10 powerful risk factors for premature death. In most countries in the world, five determinants of lifestyle such as physical inactivity, unhealthy diet, caloric excess, obesity, and smoking are the greatest public health problems.

In 2017, about 13.3% of the Philippine population was undernourished. Undernourishment is endemic and increasing throughout most of the archipelago. This problem is particularly prevalent in rural areas. According to the Philippine Ministry of Health, one-half of all deaths involved infants to 4 years old, and about one-half of the accelerated rate among those aged 5 and younger is undernourished.

In the Philippines, undernourishment and obesity have become a global health issue. There are 795 million undernourished people in the world today; hunger and malnutrition are the number one risk to

health worldwide [6]. A national survey reveals that 20% of Filipino children aged 0-5 are underweight while 30% are stunted or too short for their age. The Philippines ranked 9 in the world with the most number of stunted children [7]. It remains a public health concern in both urban and rural areas. This continues to be a serious child health problem. Undernourished children are not able to take on physical work and sporting activities, they are less able to attend school and are less able to concentrate and learn [8].

Knowing the importance and the benefits of engaging in physical activities and proper nutrition, the researchers were motivated to conduct a study in a different location and type of children. The researchers wanted to reveal the physical fitness and activities among the Subanen children in the province. The Subanens were the first settlers of the province. They are classified as the indigenous group of the place. The community is known for its rich culture, practices, and beliefs, and good singers and dancers. Singing, dancing, and having amusement during their pastime are some of the activities of Subanens [9]. Thus, the researchers aim to know if there are underweight, overweight, and obese among the Subanen children.

Materials and Methods

This study used a quasi-experimental research design that aimed to describe the existing variables and help uncover new facts and meanings based on the result of the program implemented. In this study, the researchers identified the physical fitness level and activities of the respondents, implemented physical activities and feeding programs, and compared results thereafter. The researchers conducted a Physical Fitness Pre-Test and Post-Test with the respondents using the Standard Physical Fitness Test Program of the Department of Education (DepEd) and the Standardized Physical Fitness Test by the Bureau of Physical Education and School Sport. The test aimed to identify the fitness level of the respondents and was utilized as the basis for designing feeding and fitness programs.

The study was conducted in the three Barangays in Ozamiz City, Misamis Occidental, Mindanao, Philippines. These places were chosen since most of the residents were pure-blooded *Subanen* based on the Department of Social Welfare and Development (DSWD) data.

The respondents of the study were children ages 9 to 12 in the three barangays where a purposive sampling technique was used to ensure that the respondents were true-blooded Subanen children. The researchers chose ten children from each barangay and asked them to perform the physical fitness test and activities. The respondents were limited to 10 participants for closed monitoring in the program being implemented.

A researcher-made checklist was used to identify the physical activities including household chores, and the physical fitness level and the Body Mass Index of the respondents. Standard Physical Fitness Test (SPFT) was also used to identify the level of fitness level of the Subanen children. This test is adapted from the Department of Education Physical Fitness Test [10]. To identify the household chores and Physical Fitness Activities of the respondents, a researcher-made survey checklist was used. The respondents' height and weight were measured to get the Body Mass Index (BMI). PFT was conducted to identify the respondents' physical fitness level.

Based on the assessment, the researchers designed and implemented a Physical Fitness Program to improve the fitness level of the respondents. Consequently, a feeding program, based on the Body

Mass Index of the respondents, was devised to gain weight for the respondents who were underweight. After which, the Post Physical Fitness Test was conducted.

Descriptive statistics was used to analyze the results which aimed to identify the activities of the respondents and their level of fitness. A t-test was used to determine if there was a significant difference in the physical fitness level of the respondents before and after implementing the Physical Fitness Program.

Results and Discussion

This discussion focused on the physical fitness level and physical activity of the Subanen children.

Table 1 reflects that most of the respondents prefer to do household chores to being involved in games/ recreational activities. Parents today want their kids to spend more time on things that can bring them success and these are doing household chores [11]. Bouchard [12], also explained that leisure-time activities are likely used in daily chores and upkeep of the house. In other cases, exercise may only be thought of as something one does as a leisure-time activity.

Household Chores	Frequency	Percent	Games/ Recreational Activities	Frequency	Percent
Sweeping	30	100	Volley ball	21	70
Dishwashing	30	100	Takyan	20	66.7
Washing Clothes	24	80	Shatong	24	80
Cooking	20	66.7	Basket ball	16	53.3
Farming	17	56.7	Patintero	27	90

Table 1: Respondents' physical activities.

As revealed, all the respondents do sweeping and dishwashing every day. Twenty-four of them wash clothes every day, while 20 out of 30 cook dishes for their families. However, 17 out of 30 do farming. In doing physical activities, it is revealed that the majority of the respondents play patintero. Twenty-four out of 30 play shatong and 21 out of 30 play volleyball. However, only 16 out of 30 of the respondents play basketball.

Table 2 reveals that all respondents are underweight. The result signifies that children in rural areas are underweight. The result affirms the findings of Saeidlou et al. [13], that children living in rural areas are underweight due to lack of physical activity engagement, food lifestyle, cultural environment, and economic status. Moreover, they are underweight due to a lack of exposure to physical activities and other high technologies.

BMI	Frequency	Percent
Underweight	30	100
Normal	0	0
Overweight	0	0
Obese	0	0
Total	30	100

Table 2: Respondents' body mass index.

The result reflected in the report of the Food and Agriculture Organization [14], that the Philippines ranked ninth in the world for the number of children with stunted growth. Also, the present economic situation of the country aggravates the malnutrition problem with

Menu	Nutritive Value (Recipe, Calorie, & Nutrition Calculator)	Serving	Schedule of Feeding	Calories Food Intake
<p>Pansit Guisado A Filipino dish, also known as Pancit Bihon Guisado. The word Guisado refers to the method used in cooking the dish means "sauteed".</p> <p>Ingredients: ½ kilo Pancit bihon ½ kilo Chicken thigh ¼ kilo Shrimp ½ kilo Cabbage ¾ kilo Carrot 1 pc. Onion 5 tbps. Dark Soy Sauce 5 Cloves Garlic ¼ teaspoon ground black pepper 4 tbps cooking oil 4 cups water</p>	<p>% Daily Value Total Fat 11g: 8% Saturated Fat 1.6g Trans Fat 0.1g: 7% Cholesterol 22mg: 18% Sodium 424mg: 9% Potassium 310mg: 6% Total Carbohydrates 17g: 11% Dietary Fiber 2.8g Sugars 4.1g Protein 8.5g Vitamin A: 37% Vitamin C: 70% Calcium: 4% Iron: 7%</p>	2 cups	Monday, Wednesday, Friday (Lunch Time)	1,600-2000 Kcal
<p>Vegetable Lumpia A simple fried appetizer dish made from vegetables and fried tofu. Wrapped in egg roll wrappers and then fried until crispy.</p> <p>Ingredients: 2 cups shredded cabbage 1 medium yellow onion 1 small tomato 1 teaspoon minced garlic 2 teaspoons coarse sea salt ¼ teaspoon ground black pepper Egg roll wrapper 1 ½ cups cooking oil</p>	<p>% Daily Value Total Fat 1.5g: 0% Saturated Fat 0g Trans Fat 0g: 0% Cholesterol 0mg: 25% Sodium 590mg: 11% Total Carbohydrates 34g: 24% Dietary Fiber 6g Sugars 3g Protein 6g Vitamin A: 120% Vitamin C: 30% Calcium: 2% Iron: 10%</p>	4 spring rolls	Monday, Wednesday, Friday (Lunch Time)	1,600-2000 Kcal
<p>Fried Chicken A dish consists of chicken pieces that have been coated in a seasoned batter and pan-fried, deep-fried, or pressured-fried.</p> <p>Ingredients: 1½ kilos. chicken drumsticks ½ cup all-purpose flour 5 tbsp Soy Sauce 2 pcs. Calamansi 1/8 teaspoon ground black pepper 2 cups cooking oil</p>	<p>% Daily Value Total Fat 21g Saturated Fat 5.7g: 32% Polyunsaturated Fat 4.8g: 29% Monounsaturated Fat 8.2g: 42% Cholesterol 126mg: 5% Sodium 118mg: 9% Potassium 328mg: 1% Total Carbohydrates 4.4g: 1% Dietary Fiber 0.1g Sugars 0g Protein 40g Vitamin A: 2.5% Vitamin C: 0% Calcium: 1.8% Iron: 11%</p>	1 piece	Monday, Wednesday, Friday (Lunch Time)	1,600-2000 Kcal
<p>Rice The most widely consumed staple food for a large part of the world's human population.</p>	<p>% Daily Value Total Fat 0.4g Saturated Fat 0.1g: 1% Polyunsaturated Fat 0.1g Monounsaturated Fat 0.1g: 0% Cholesterol 0mg: 0% Sodium 1.6mg: 2% Potassium 55mg: 15% Total Carbohydrates 45g: 3% Dietary Fiber 0.6g Sugars 0.1g Protein 4.3g: 0% Vitamin A: 0% Vitamin C: 1.2% Calcium: 2% Iron: 1.8%</p>	1 cup of cooked rice	Monday, Wednesday, Friday (Lunch Time)	1,600-2000 Kcal

Table 3: Mabasog L'ambo Ita feeding program.

about 28 million Filipinos unable to buy food to meet their nutritional requirements and other basic needs. Many Filipinos continue to go hungry and become underweight due to inadequate food intake and nutrients, even though there is enough food to feed the country. Children, especially in rural areas, need more energy, which makes them more liable for undernutrition.

Based on the results of the Physical Fitness Pre-Test, the researchers designed a Fitness Program for the respondents to improve their performance and fitness level.

Mabasog L'ambo Ita Feeding Program

Rationale: The Mabasog L'ambo Ita is a Subanen word that translates to "Busog-Lusog". A common problem in our country is poverty. Almost every Filipino is suffering from hunger and starving to death, which affects the children's growth. A feeding program is the most outright solution that can be offered to society. A Feeding Program is designed by the researchers to increase the body weight of the respondents which may help them improve their performance in any

activity both physical and mental health. This program aims to increase the Body Mass Index and provide healthy and nutritious meal plans for the respondents (Table 3).

Three (3) dishes in one meal for 3 times in a week were prepared. These are Pancit Guisado, Vegetable Lumpia, and Fried Chicken added with one cup of rice. Pancit Guisado is a Filipino dish, also known as Pansit Bihon Gisado, and the method used in cooking is “sautéed”. Vegetable Lumpia is an appetizer dish made from vegetables and fried tofu. Lastly, is the Fried Chicken cooked pan-fried, deep-fried, and pressured-fried. The researchers calculated the nutritive value of each recipe using the online Nutrition Value Calculator [15] (Table 4).

Physical Activities Health Related	Passed		Failed	
	Frequency	Percent	Frequency	Percent
Sit and reach	30	100	0	0
90-degree push-up	25	83	5	17
3-minute step-test	9	30	21	70
Skill Related				
Hexagon agility test	30	100	0	0
Stick drop	25	83	5	17
40-meter sprint	15	50	15	50
Stork balance stand test	15	50	15	50
Paper Juggling	10	33	20	67
Standing long jump	10	33	20	67

Table 4: Health and skill-related physical activities - pre-test.

In the Health-Related Physical activities, all respondents passed the sit and reach. This activity aims to measure the respondents’ flexibility level. It was followed by the 90 degrees push-up with 25 respondents passed. This activity measures the respondents’ muscular strength while only 9 respondents passed the 3-minute step-test in which this activity measures the respondents’ cardiovascular endurance level.

While in the Skill-Related Physical Activities, all respondents passed the hexagon agility test. This aims to measure the ability of a person to transfer from one place to the other with quickness and lightness of movement. Followed by the stick drop in which 25 respondents passed the activity. Stick drop measures the alertness level and how a person will react in a certain situation. Half of the respondents passed the 40-meter sprint which measures the ability of a person to do successive movements in the shortest period; 50% also passed the stork balance stand test which measures the ability of the person to balance his/her body. However, 20 respondents failed the paper juggling which measures the respondents’ eye and hand coordination, and also, 20 failed in the standing long jump which aims to measure the person’s ability to release maximum force in a given period.

The respondents are performing well in the health-related physical activities compared to the skill-related physical activities. The result is analogous to the study conducted by Ujevic et al. [16], wherein health-related physical activities have been viewed as a narrower concept focusing on the aspects of fitness that are related to day-to-day functioning and health maintenance. It also affirms the result in table 2 that the respondents are more into doing the household chores which are part of their day-to-day activities compared to doing physical fitness activities.

Based on the results of the Physical Fitness Pre-Test, the researchers designed a Fitness Program for the respondents to improve their performance and fitness level.

Mephesihad Ita: A Subanen Physical Fitness Program

Rationale: Fitness programs are usually designed to help promote and maintain the good health and physique of a person. Mephesihad Ita is a Subanen word that translates to “Let’s Get Fit”. It is a fitness program designed for underweight Subanen children to improve their level of fitness and also their performance. This 30-day fitness program for Subanen children is designed to help improve their health and skill-related fitness activities, and quality of life through physical activity (Table 5).

Activities	Components of Fitness Test	Procedure	No. of Sets	No. of Repetitions	Time
10-Minute Jog -a form of trotting or running at a slow or leisurely pace.	Cardiovascular Endurance	The ball of the foot should touch the ground lightly first while the toes point downward. The foot should then move in a constant graceful rhythm.	Heart rate per minute before the activity	60-100 beats per minute	10 minutes
			Heart rate per minute after the activity	185-215 beats per minute	
Panther Shoulder Tap -an exercise targeting the abdominals and core. The basic stance matches the top of a push-up position	Strength	Start on all fours. Keep your back flat and your butt down, lift your knees off the floor about 1-3 inches. Tap your right hand to your left shoulder, and then your left hand to your right shoulder. Continue alternating sides.	3 sets	12 reps.	15 minutes
Standing Hamstring - an exercise that targets the hamstring and also involves calves	Flexibility	Slowly bend your left knee until you feel a very mild pulling or stretch on the back of your right thigh. Stretch a little more, bend forward slightly at your hips, keeping your back straight. Hold and then repeat with your other leg.	3 sets	12 reps.	10 minutes
Standing Balance with Toss Ability to maintain a position while moving.	Coordination	Use a tennis ball or. Position intermediate clients to balance on one leg with the opposite leg lifted at 90 degrees at the hip and knee.	1-2 sets	10-20 repetitions	5 minutes
Ladder Simple Hops -the most effective tool in enhancing the child’s agility test. It helps work on one’s balance.	Agility	Simply hop along the entire ladder, landing one time in each square. Single-leg hops force you to provide more force with each leg than when they are both being used.	2 sets	15 repetitions	10 minutes

<p>Alternate Leg Bound -It is a running-like activity. It helps enhance the sprinting speed and boost the response of running.</p>	Speed	Start by taking a step forward with your right left and drive off of that leg while driving the left leg into the air. Drive the knee up as forcefully as possible while the opposite arm drives forward like you would in a sprint."	3 sets	8-10 reps.	10 minutes
<p>Side Planks -a body movement that helps strengthen the abdomen, legs, and arms</p>	Power	Lie on your side with your knees bent, and prop your upper body up on your elbow. Raise your hips off the floor, and hold for 6 seconds. Switch to your other side and repeat to the other side.	2 sets	12 sec.	3 minutes
<p>One Leg Balance A common balance exercise in improving balance.</p>	Balance	Stand upright and feet together. Lift one foot off the ground. Do not allow your legs to touch.	3 sets	10 reps.	5 minutes
<p>Bounce and Catch -an exercise using the hand. This improves the quickness of the person.</p>	Reaction Time	Bounce two balls to waist height alternating hands with each bounce. Look directly at the ball while bouncing and try to see the number.	2 sets	6-8 reps.	3 minutes

Table 5: Mephesihad Ita: Proposed physical fitness program.

This program is supported by the study of Raichlen et al. [17], on the importance of participating in physical fitness activities. Being young, children have a lot of potential to develop a hobby that keeps their fitness regulated for a lifetime. Being physically active and fit holds utmost importance, especially among today's younger generation who are busy enjoying the luxuries of mobile, laptop, and TV at an alarming rate and are not active and spirited daily. Moreover, being physically fit overhauls personality. It allows a person to perform physical activities without being tired or restless. It also ensures being mentally fit and stress-free. To enjoy the beauty of life and to experience it to the fullest, they must start getting involved in physical activities.

In addition, the Medical Associates of Northwest Arkansas [18], emphasized that a physical fitness program is important for all ages especially for children since it promotes good health regardless of body type. Furthermore, the American Heart Association [19], states that taking part in a physical fitness program makes someone feel better, look better, and live better. Thus, it improves the overall quality of life.

After the implementation of the fitness program, there was a big increase in the number of respondents passing both health and skill-related fitness activities. During the pre-test, 20 respondents failed in paper juggling and standing long jump activities. However, in the post-test, half of the respondents passed the said tests (Table 6).

The result is supported by My Fit Fitness [20], on the importance of engaging in or performing exercises despite of age. It is emphasized that fitness training is the main factor that increases the

Physical Activities Health Related	Passed		Failed	
	Frequency	Percent	Frequency	Percent
Sit and reach	30	100	0	0
90-degree push-up	26	86.67	4	13.33
3-minute step-test	24	80	6	20
Average	26.67	88.89	5	16.67
Skill Related				
Hexagon agility test	30	100	0	0
Stick drop	26	86.67	4	13.33
40-meter sprint	23	76.67	7	23.33
Stork balance stand test	23	76.67	7	23.33
Paper Juggling	15	50	15	50
Standing long jump	17	56.67	13	43.33
Average	22.33	74.45	7.67	34.44

Table 6: Post-physical fitness test.

children's and teenagers' meeting level of physical activity. The body involved in physical activity results in a healthier level of physical fitness and health.

Table 7 revealed that there is a significant difference between the performance of the respondents during the pre and post-test on the following activities: Stick Drop, 40-meter sprint, 90-degree push-up, sit and reach, paper juggling, hexagon agility test, and stork balance. The significant value of 0.002 indicates that the respondents became more active and alert after engaging in the physical fitness program specifically on Stick Drop. After the 40-meter sprint fitness activity, it showed an improvement during the post-test as shown by the significant value of 0.033. Moreover, 90 degrees push-ups, sit and reach, paper juggling, hexagon agility, and stork balance tests show a significant difference between the performances during pre and post-test as shown by the significant value of 0.000. After the fitness program the respondents gain more strength and flexibility, balance, their level of coordination between eye and hand increase, became more alert and agile.

However, 3 minute-step test which is a test for cardiovascular endurance, and the standing long jump which is a power test, showed no significant difference in their performance before and after giving them the physical fitness program. It shows that the respondents' level of cardiovascular endurance is still the same before and after the researchers gave the physical fitness program, as the case may be the program is not enough to affect the respondents' level of cardiovascular endurance and power, most of the respondents failed to pass the activities 3-minute step test and standing long jump. This result is supported in the pre and post-test performance results of the respondents in this activity 3-minute step test and standing long jump as shown in tables 4 & 6.

It is concluded that proper nutrition and constant training would help improve one's physical activity performance. Constant engagement in any physical activity will improve one's level of fitness and performance. However, it only proves that most of the children living in the rural areas have poor Body Mass Index more physical exertion but less food intake.

Children living in rural areas usually engage in household chores compared to engaging in physical fitness activities because they are

Paired Samples Test										
Mean		Paired Differences					t	df	Sig. (2-tailed)	Interpretation
		Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference						
				Lower	Upper					
Pair 1	Stick Drop (pre & post)	3.53	5.532	1.010	1.467	5.599	3.498	29	0.002	Significant
Pair 2	40 meter sprint (pre & post)	0.148	0.364	0.066	0.012	.284	2.235	29	0.033	Significant
Pair 3	3 minute step test (pre & post)	0.266	3.453	0.630	-1.022	1.556	0.423	29	0.675	Not Significant
Pair 4	90 degrees (pre & post)	-4.466	6.174	1.127	-6.772	-2.161	-3.963	29	0.000	Significant
Pair 5	Sit and reach (pre & post)	-7.466	5.022	0.916	-9.342	-5.591	-8.143	29	0.000	Significant
Pair 6	Paper juggling (pre & post)	-8.300	4.170	0.761	-9.857	-6.742	-10.902	29	0.000	Significant
Pair 7	Hexagon agility (pre & post)	1.266	1.552	0.283	.687	1.846	4.470	29	0.000	Significant
Pair 8	Standing long jump (pre & post)	-5.833	31.385	5.730	-17.552	5.886	-1.018	29	0.317	Not Significant
Pair 9	Stork balance (pre & post)	-6.466	4.500	0.821	-8.147	-4.786	-7.870	29	0.000	Significant

Table 7: Paired t-test results in the performance of the respondents during the pre-and-post physical fitness test.

expected to help with the household chores because their parents are busy with their farming, no time for physical activity if there is but only minimal physical activity. However, it greatly affects the level of performance of the respondents in doing health-related physical activities. It is recommended that Subanen children should eat proper nutritious food to improve their Body Mass Index (BMI) and engage regularly in physical fitness activities to improve their level of performance. The parents should prepare meals that are less expensive but are healthy and nutritious for their children. The Subanen Community should include health and wellness activities as part of their practices to promote healthy living among the Subanen both children and adults.

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