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Research Article

Fitness, Physical Activity and Health Practices of Grade 9 Students of Public High Schools of Botolan District Sy 2017-2018

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ABSTRACT

This study aimed to determine the fitness, physical activity and health practices of Grade 9 students of public high schools of Botolan District, Division of Zambales during SY 2017-2018.

The study utilized descriptive research design with questionnaire as the main instrument ingathering data from Grade 9 student-respondents who were randomly selected from six secondary schools in Botolan District.

The students' profiles considered in the study were limited to their age, sex, height, weight, body mass index, monthly family income, participation in organized sports, participation in unorganized physical activity and physical activities, leisure time and diet.

The extent of preference of the respondents on fitness, physical activity and health practices were assessed in terms of physical activity as maximum health benefit and distinct types of physical activity to address unique health concerns and contribute in distinct ways to children's health, health- and performance-related fitness.

The study revealed that the majority respondents were female in their early teen- age hood, with average height, weight, normal body mass index and inadequate family monthly income. The respondents assessed "negative" for both organized and unorganized sports activities. The respondents assessed "often" with moderate physical activities, with 15-30 minutes moving a day and medium in the conduct of aerobic or Zumba while "agree" on the health practices. The respondents perceived "agree" on the overall general knowledge and awareness on fitness, physical activity and health practices. There is a significant difference between the organized and unorganized sports activity.

There is a significant difference when grouped according to age, body mass index and family income respectively towards physical activity and health practices while significant on body mass index towards leisure time. There is significant difference when grouped according to height, weight, body mass index and family monthly income towards overall general knowledge and awareness on fitness,

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physical activity and health practices and there is a high positive relationship between the level of awareness and the level of sports participation

Based on summary of the investigation conducted and the conclusions arrived at, the researcher have offered the following recommendations to consider healthy body a great treasure and to start engaging in physical activities that help and regulate good sound and healthy body instead of engaging in activities as drinking liquor or smoking that may cause severe illness or death; to encourage the respondents not to skip meals for better life and healthy body; to seek advises from health professionals or medical doctors before engaging in heavy sports activities; to assure rendering from gradual to complex physical activities; that a physically fit person eating a nutritionally adequate diet can have improved performance in school; to improve quality of life, one must practice and observe healthy living; and finally to conduct a parallel or similar study with in-depth and broader scope so as to validate and confirm the findings obtained in the study.

Keywords: *Physical Fitness,Health Practices,Secondary Level,Botolan District*

Background

The World Health Organization (WHO) defined health with a phrase that is still used today. "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Sartorius, 2005; Mihanovic, 2015). WHO further clarified that health is: "A resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities." This means that health is a resource to support an individual's function in wider society. A healthful lifestyle provides the means to lead a full life, (Nordqvist, 2017). More recently, researchers have defined health as the ability of a body to adapt to new threats and infirmities. They based this on the idea that modern science has dramatically increased human awareness of diseases and how they work in the last few decades. Physical health refers to the fitness, physical activities and health practices of an individual, in which physical is one of the two most commonly discussed types of health.

The importance of the researched problem stems from modern society's needs for the maintenance of the nation's physical and mental health, the development of physical education systems in educational institutions, and the promotion of a healthy lifestyle. The need for knowledge and understanding of physical education as a value-humanistic basis of reproduction, safety, quality of life, and individual activities in the context of a complex and conflicting evolution of human civilization is critical in today's world. In all countries, governmental policies on population sports education are primarily directed at young people.

The study of theoretical and methodological bases for monitoring the formation of recreational physical culture in society contributed to the study of modern youth's physical health, which contributed to the study of theoretical and methodological bases for monitoring the formation of recreational physical culture in society. This is related to the growing importance of the issue of self-identification in the process of familiarizing young people with physical education as a disease prevention tool. This type of juvenile physical activity reduces unfavorable phenomena in the younger generation significantly (stress, lack of exercise, drug addiction, etc.). It is a socializing technique as well as an influence component. Competent physical fitness and public awareness of the importance of physical culture help to restore the

nation's genetics, address the demographic and consciousness crises, and develop and promote spiritual and physical principles in individuals.

Physical activity is essential for good health, and its significance goes far beyond its role in achieving energy balance in the prevention and treatment of obesity and overweight. Adequate daily physical activity enhances cardiovascular, metabolic, cognitive and behavioral health, and musculoskeletal health—benefits that can be achieved at any age, according to new research.

Education and training in schools are essential elements in the development and socialization process of children from early childhood. It is widely recognized that schools may play an important role in nurturing adolescents' physical health and in shaping adolescents' well-being in physical activity. White (2013) pointed out that when adolescents enjoy school, they are more likely to perform better. However, several researchers have highlighted that little agreement exists in the research literature on how to best define and measure adolescents' well-being (White, 2013). The school is a place where youths spend most of their lives. It is therefore an important arena to create good physical health, quality of life and to prevent drop out from school (Helsedirektoratet, 2015)

The prevalence of childhood obesity is increasing in many countries with adverse societal impact. Nevertheless, to date, successful efforts to tackle the problem of childhood obesity have been insufficient. Further economic evaluation is required, including an improved understanding of the link between academic achievement and childhood obesity 'strengthening the economic arguments for interventions. Furthermore, the daily physical education enrolment rates declined in the early 1990s and have not improved since that time. Only 35% of high school students report meeting nationally recommended levels of physical activity (Clarke, Fletcher, Lancashire, Pallan, Adab, 2013). Davis, Pollock, Waller, Allison, Dennis, Bassali, Meléndez, Boyle and Gower (2012) documented evidence for a dose-response to regular, vigorous activity on executive function.

Today's children are the citizens of tomorrow's world. As we all know our population consists 52.27 percent of children age group covers primary and secondary education based on Philippine Statistics Association as of July, 2017. Students are the most vulnerable part of the youth who are facing a number of difficulties. One of the most urgent and serious modern problems being faced by the society is a problem of a quality of life, improved healthy lifestyle of the modern youth and distraction it from antisocial manifestations, thus researcher feels the necessity of exploring the alignment of social chances of young people through the formation of fitness, physical activity and health practices among the Grade 9 students of Botolan District, Division of Zambales. For in the end, it is social justice and human rights work to provide nourishment and education to the children of the world (Robert, Weaver-Hightower, Marcus, 2011).

Significance of the Study

People who work with the students should clearly understand with the learner in order to be more effective in their dealings with them and with their problems. With these findings, it is hoped that a vivid picture of their nature, needs and aspirations can be seen and therefore become foundation for a well- fit, physical active and healthy student. In particular, the study is significant to the following:

Administrators. It may be an eye opener in formulating and preparing school programs and faculty development program which could make the teaching productive.

Supervisors and School Principals. Findings of this study may serve as a bases and reflection of their performance in administrative and supervisory aspects in terms of Physical Health within their schools and their districts.

Local Government Unit. It may serve as basis also in making decisions and actions in appropriating school board fund for the schools and appropriate budget for the enhancement of teaching.

Parents. It may serve as inspiration to emphasize the importance of proper school-home coordination to support every activity that will promote and will mold the learners as young

individuals who are academically, socially, physically and scientifically equipped.

Community. The result may help the school-community provide physical health programs to create an environment that focuses on fitness, physical activities related to school activities.

Teachers. The results of the study would lead to timely, relevant and most appropriate learning and development interventions.

Students. The results would benefit the students in terms of their Physical Health Education relatively to their academic performance.

Researchers. This could serve as a prelude to other researches on physical health to academic performance of the learners.

Statement of the Problem

This study aimed to determine the fitness, physical activity and health practices of Grade 9 students of public high schools of Botolan District, Division of Zambales.

Specifically, it sought answers to the following questions:

1. What is the profile of the respondents in terms of:
   1.1. age ;
   1.2. sex;
   1.3. height;
   1.4. weight;
   1.5. Body Mass Index; and
   1.6. Monthly family income?
2. Do the students participate in school activities?
3. How will the level of participation of the students be described?
4. How is the level of participation of the students to physical fitness in school and at home?
   4.1. physical activities;
   4.2. leisure time; and
   4.3. health practices?
5. How will the level of knowledge of fitness, physical activity and health practices be described?
6. Is there a significant difference on the level of participation to sports activities?
7. Is there a significance difference on the level of participation as cited in problem #4 when grouped according to profile variables?
8. Is there a significant difference on the perception / assessment towards general knowledge as cited in problem #5 when grouped according to profile variables?

Scope and Limitation of the Study

The study determined the fitness, physical activity and health practices of Grade 9 students of public high schools of Botolan District Division of Zambales.

The students' profiles considered in the study were limited to their age sex, height, weight, body mass index, monthly family income, participation in organized sports, participation in unorganized fitness and physical activities, leisure time and diet.

The study aimed to explore the fitness, physical activity and health practices in a sample of students. The extent of preference of the respondents on fitness, physical.

Methods

This portion of the study presents the methodology applied which includes the research design, the location and respondents or samples, the instruments, data gathering procedures and data analysis procedures.

Research Design

The study used the descriptive-survey research design with survey questionnaires as the main instrument in gathering the required data. Descriptive –survey method was used in order to describe the fitness, physical activity and health practices.

According to Marshall and Rossman (2010), a researcher can adopt three different kinds of research methods namely *exploratory, descriptive and causal research.* The researcher in this case should adopt the descriptive research method. Ritchie, Lewis, Nicholls, and Ormston (2013) opined that by using the descriptive method the researcher will be able to observe a large mass of target population and make required conclusions about the variables. The researcher by using descriptive research can effectively design a pre-structured questionnaire with both open ended and closed ended questions. The information collected from the responses of can be statistically presented in this type of research method for the easy

interpretation of the report users. Since the researcher is trying to analyze the customer opinion, attitude, behavior and satisfaction level in relation to services and products hence the researcher should effectively use the descriptive method in order to statically analyze the data.

According to Salaria (2012), descriptive survey research is a method of research which concerns itself with the present phenomena in terms of conditions, practices, beliefs, processes, relationships or trends invariably. Moreover, research design is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation. It is not simply amassing and tabulating facts but includes proper analyses, interpretation, comparisons, identification of trends and relationships (Aggarwal, 2008).

Respondents and Location

The respondents of this study were drawn from 915 students of public high schools in Botolan District, Division of Zambales.

From Botolan District- Baquilan Resettlement High School, Beneg National High School, Botolan National High School, Loob-Bunga High School, New Taugtog National High School and Panan National High School.

The respondents were chosen through Slovin's formula thus 915 students were trimmed down to 278 students and then used stratified sampling technique.

Stratified random sampling was used when the researcher want to highlight a specific subgroup within the population. This technique was useful in such research because it ensured the presence of the key subgroup within the sample.

Researcher also employ stratified random sampling when they want to observe existing relationships between two or more subgroups. With stratified sampling, the researcher had the sample even the smallest and most inaccessible subgroups in the population. This allowed the researcher to sample even the rare extremes of the given population.

With this technique, the researcher has a higher statistical precision compared to simple random sampling. This was because the variability within the subgroups is lower compared to the variations when dealing with the entire population.

Because this technique has a high statistical precision, it also meant that it required a small sample size which saved a lot of time, money and effort of the researcher.

Table 1. Frequency Distribution of Respondents

Public High Schools in Botolan District	Number of Respondents	Percentage	Slovins
Botolan District			
Baquilan Resettlement High School	38	4.00	12
Beneg National High School	51	6.00	15
Botolan National High School	518	57.00	157
Loob-Bunga High School	105	11.00	32
New Taugtog National High School	109	12.00	33
Panan National High School	94	10.00	29
TOTAL:	**915**	**100.00**	**278**

The student-respondents were given researcher made survey-questionnaire to determine the fitness, physical activity and health practices.

The study was conducted in Botolan District of Zambales for the school year 2017-2018. Figure 2 shows the location of the selected public high schools in Botolan District, Division of Zambales.

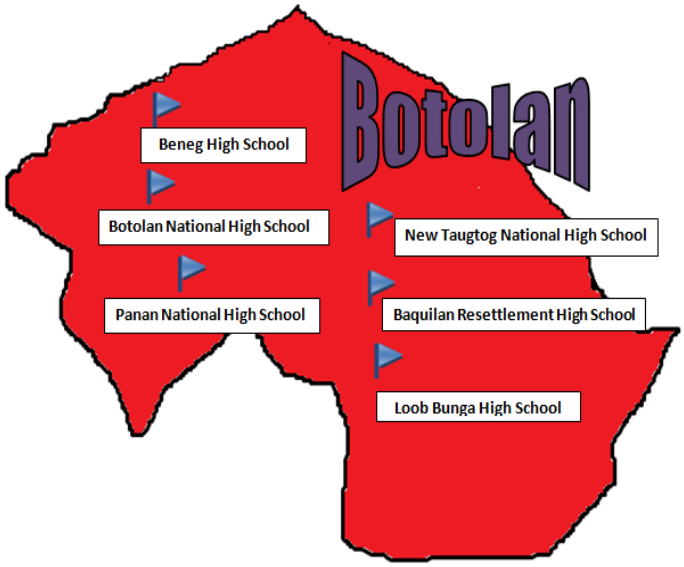

Figure 2. Map of Zambales showing the Location of the Selected Secondary Schools in Botolan District, Division of Zambales

Instruments

The 5 point Likert scale-type survey questionnaire serves as the main instrument in gathering the data. It is composed of three parts.

The first part was consisted of the demographic profile of the respondents. The profile of the students included age; sex; height; weight; body mass index; sports participation in organized group; sports participation in unorganized group and diet.

The second part is the Physical Activity which is consisted of 24 items on physical activity sports, level of physical activity and leisure activity.

The last part is the overall/ general knowledge of fitness, physical activity and health practices which is consisted of 17 items.

The survey tool is a researcher –made questionnaire. Some concepts were lifted from Makeover Fitness Forms 2018, K to 12 Grade 9 Learner's Material MAPEH, (MeDesign 01865 426219) Ref: CAMB/PA/4/1201 and Evaluating PA: AQAP Questionnaire: Bedouet, Gusto, Leglu, Beslin, Decou, Negre, Planage, Chazhetelle, Mercier, Lantieri, Tichet, (2011).

The survey questionnaire was subjected to construct and content validity. Three experts are tapped to check the consistency of the items in each variable. A total of 10 students were asked to answer the survey questionnaire. The responses were processed and subjected to reliability test. The Cronbach Alpha of the questionnaire is 0.80 to 0.90 which indicated the high reliability index thus the questionnaire used for the study.

Data Collection

The study followed the following procedure:

Phase 1. Developed and validated the research questionnaire.

Phase 2. Secured permission and approval from the Office of the Schools Division Superintendent and the Principals of randomly selected schools through the endorsement letter of RMTU Graduate School.

Phase 3. Administered the survey questionnaire.

Phase 4. Analyzed and interpreted the data gathered.

Phase 5. Wrote the research report.

Data Analysis

The computer software SPSS version 20 and MS Excel 2013 was used for the processing data. The statistical tools were used in the analysis and interpretation of data and hypotheses testing including the following:

Frequency and Percent Distribution. This was employed to determine the frequency counts and percentage distribution of the raw scores of the respondents.

Percentage. This was used to determine the frequency counts and percentage distribution of personnel related variables of the respondents using the formula:

Percentage (%)=F/N X 100

Where:

% = percentage

F = Number of Observation

N = Total Number of Respondents

Weighted/ Arithmetic Mean. This was utilized to determine the average of the responses using the formula:

WM = Wi x F/N

Where:

WM = Weighted Mean

Wi = Weighted Scale

F = Frequency

N = Total Number of Respondents

The survey questionnaire responses were analyzed using the rating scale analysis below:

Table 2. Rating Scale of the Questionnaire

Arbitrary Values	Statistical Limits	Verbal Description for the Physical Activity/Fitness	Verbal Description for Health Status	Verbal Description to General Knowledge in Fitness, Physical Activity and Health Practices
5	4.20-5.00	Always	Strongly Agree	Very Much Aware
4	3.40-4.19	Often	Agree	Aware
3	2.60-3.39	Sometimes	Neither Agree nor Disagree	Moderately Aware
2	1.80-2.59	Seldom	Disagree	Slightly Aware
1	1.00-1.79	Never	Strongly Disagree	Unaware

Standard Deviation. The spread of how far the observations are from their mean was measured using the mean, which was chosen as the measure of center. It was the variance's square root.

ANOVA. This was used in determining if there is a significant difference between the two or more groups of respondents.

To test the null hypotheses, the significance of the obtained t-value or Analysis Variance (ANOVA) or F-value was determined by referring to the tabular value of t and F, respectively. If the observed value of t and F equals or exceeds the value of the table, the observed value is significant at the level indicated. The null hypothesis can therefore be rejected. On the other hand, the observed value of t and F was smaller than or does not come up to the values of the table, the null hypothesis is accepted.

Steps in the Computation of ANOVA

1. First step is to compute for the total sum of the squares

$$TSS = (\sum x)^2 / N$$

Where :

TSS = Sum of the Squares

$\sum x^2$ = Sum of the Squares of each Entry

$\sum x$ = Sum of All Columns

N = Total Number of Entries

2. Second step is to compute of the squares between column

SSb = 1 / no. of rows x ∑ (sum of each column) 2 – $(\sum x)$ 2 / N

Where :

SSb = Sum of Squares between Column

$\sum x$ = Sum of all Columns

N = Total Number of Entries

3. The third step is to compute for the sum of squares within = column

SSw = TSS – SSb

Where:

SSb = Sum Squares Within- Column

TSS = Total Sum of Squares

SSa = Sum of Squares Between – Column

4. To complete the ANOVA table, calculate the mean of sum of squares.
   MSS = SS / df
   SS = Sum of Squares (between – column and within- column)
   Df = Degrees of Freedom
   F = test Formula is applied after completing the ANOVA table.
   Where:
   SS_B = Mean of Squares between- column
   SS_W = Mean Sum of Squares within-column
5. ANOVA is used to test the hypothesis.
   $F = MMS_B / MSS_W$
   Where:
   TSS = Sum of Square Total
   SSb = Sum of Square between
   SSw= Sum of Squares within

Decision Rule

If the computed P or Significant Value is greater than (>), 0.05 Alpha Level of Significance, Accept the Null Hypothesis and Reject the Alternative.

If the computed P or Significant Value is less than (<), using 0.05 Alpha Level of Significance, Reject Null Hypothesis and Accept the Alternative.

Results and Discussion

This chapter presents the gathered and processed data using tabular form analyzed and provide interpretation so as give a better and clear understanding on the problems posited in the earlier Chapter 1.

1. Profile of the Respondents

Table 3. Distribution on the Respondents' Profile

Profile Variables		Frequency	Percent
Age Mean age=16.06	14	65	23.40
	15	29	10.40
	16	111	39.90
	17	4	1.40
	18	34	12.20
	19 Above	35	12.60
Sex	Male	109	39.20
	Female	169	60.80
Height Mean=1.54 meters	1.2-1.27	5	1.80
	1.28-1.35	4	1.40
	1.36-1.43	13	4.70
	1.44-1.51	95	34.20
	1.52-1.59	99	35.60
	1.60-1.67	46	16.50
	1.68-1.75	9	3.20
	1.76-1.83	3	1.10
	1.84-1.91	4	1.40
Weight Mean=45.07 kgs.	30-40 Kgs.	69	24.80
	41-50 Kgs.	157	56.50
	51-60 Kgs.	49	17.60
	61-70 Kgs.	2	.70
	81-90 Kgs.	1	.40
Family Income Mean= Php 23,1674.6	Low Income (Php 0 to Php 11,914.50	79	28.40
	Moderate Income (Php11,915 to Php49,526)	178	64.00
	High Income (Php50,000 and up)	21	7.60

Profile Variables		Frequency	Percent
Body Mass Index Mean=19.84 Normal	Obese (30.0-34.9)	13	4.70
	Normal (18.5-24.9)	182	65.50
	Overweight (25.0-29.9)	19	6.80
	Underweight (<18.5)	64	23.00
	Total	**278**	**100.00**

Table 3 shows the distribution on the respondents' profile variables of age, sex, height, weight, family monthly income and body mass index respectively.

Age. Most of the two hundred seventy eight student-respondents, there were 65 or equivalent to 23.40% are from age group of 14 years old; 29 or 10.40%, 15 years old; 111 or 39.90%, 16 years old; 4 or 1.40%, 17 years old; 34 or 12.20%, 18 years old and 35 or 12.60%, from 19 years old and above. The computed mean age of the respondents was 16.06 years old. The data demonstrate that the respondents were very young in their teenage hood.

Sex. Mainly with the two hundred seventy eight student-respondents, there were 109 or equivalent to 39.20% are males and 169 or 60.80% are females. As shown from the table that majority of the respondents were female and this could be ascribed on the dominance of the female students in the school enrolment. This observation is almost similar to all districts where female dominates in the enrolment.

Height. From the most part of hundred seventy eight student-respondents, there were 5 or equivalent to 1.80% with height of 1.20-1.27 meters; 4 or 1.40%, 1.28-1.35 meters and 1.84-1.91 meters respectively; 13 or 4.70%, 1.36-1.43 meters; 95 or 34.20%, 1.44-1.51 meters; 99 or 35.60%, 1.52-1.59 meters; 46 or 16.50%, 1.60-1.67 meters; 9 or 3.20%, 1.68-1.75 meters; and 3 or equivalent to 1.10%, with 1.76-1.83 meters. The computed mean height of the respondents 1.54 meters. The data suggests that the respondents have a promising height in relations to their age. They are still young and will continue to increase their height until the age of 21 years old. This could be ascribed on hereditary and biological factor added with the discipline and eating balanced food.

Weight. Mainly of the two hundred seventy eight student-respondents, there were 69 or equivalent to 24.80% with kilograms weights of 30-40 kilograms;157 or 56.50%, 41-50 kilograms; 49 or 17.60%, with 51-60 kilograms; 2 or 0.70%, 61-70 kilograms and only 1 or 0.40% with 81-90 kilograms. The computed mean weight of the respondents was 45.07 kilograms. The data implies that the respondents were on their normal weight in relation to their age and height.

Family Monthly Income. Among the two hundred seventy eight student-respondents, there were 79 or equivalent to 28.40% with low family income of Php0.00-Php11,914.50; 178 or 64.00%, moderate income ranges from Php11,915.00 to Php49,526.00; and 21 or 7.60% with high income from Php50,000 and above. The computed mean of family income was 23, 1674.60 monthly. The data implies that the respondents' family income considered an average income enough to sustain for food, clothing and shelter for 5 members in the family.

Body Mass Index. Most of the two hundred seventy eight student-respondents, there were 13 or equivalent to 4.70% classified as obese (30.00-24.90) body index; 182 or 65.50% are normal which ranges form (1850-24.90) body index; 19 or 6.80% as overweight ranges from (25.00-29.90) body mass index; and 64 or equivalent to 23.00%, classified as underweight which ranges from (<18.50) body index. The computed Body mass index was 19.84 with normal body index.

As revealed from the table that majority of the respondents were on the normal body index. Many school systems struggle with the decision to eliminate physical education from their curriculum of the repercussions of those decisions. Decreased physical fitness levels, overweight, and obesity often result when students have few opportunities to be physically active; these physical symptoms often impact student motivation, thinking, and learning.

(Siegel, 2006). A gender difference emerges during puberty, with males gaining greater fat-free mass than females. Both the period of "adiposity rebound" (the increase in BMI in mid-childhood following the decline in early childhood) and puberty are times of risk for excess fat gain that correlates with future adiposity (Kuczmarski, Ogden, Grummer-Strawn, Flegal, Guo, Wei, Mei, Curtin, Roche, Johnson, 2000).

2. Level of Sports Participation

Table 4. Frequency and Percentage Distribution on the Respondents' Sports Participation N=278

Sports Participation	Organized Sports		Unorganized Sports	
	(f)	(%)	(f)	(%)
YES	55	19.80	75	26.98
NO	223	80.20	203	74.82
Total	**278**	**100.00**	**278**	**100.0**

Table 4 shows the frequency and percentage distribution on the respondents' sports participation.

For organized sports. Most of the hundred seventy eight student-respondents, there were 55 or equivalent to 19.80% who responded affirmative while 223 or 80.20% who responses negatively in participating organized sports.

For Unorganized sports. From among two hundred seventy eight student-respondents, there were 75 or equivalent to 26.98% who responded affirmative while 203 or 74.82% who responses negatively in participating in unorganized sports.

Evidently, the data that majority of the respondents were negative in participating in involving themselves to both organized and unorganized sports. Organized sports like basketball, volleyball, and other ball game requires regular training and practice while the unorganized sports dealt with similar sports and nature but on occasional practice and activity.

The Shape of the Nation Report (National Association for Sport and Physical Education [NASPE], 2006) found that 95% of parents wanted their children to participate in physical activity and physical education in grades K-12. Students also provided the reasons they enjoyed physical activity, such as maintaining their health, being outside, having fun, interacting with their peers, and competing in teams (Couturier, Chepko, & Coughlin, 2005).

3. Level of Participation to Physical Fitness

3.1. Physical Activities

Table 5. Level of Participation on Physical Activity in School

	Physical Activities	WM	QI	Rank
1	I sit	**4.37**	**A**	**1**
2	I stand	**3.99**	**O**	**3**
3	I walk	**4.09**	**O**	**2**
4	I lift heavy loads (bags with books and notebooks, lunch bag)	**3.77**	**O**	**4**
5	I sweat (classroom activities, energizers)	**3.67**	**O**	**5.5**
6	After such activities, I'm tired.	**3.67**	**O**	**5.5**
	Overall Weighted Mean	**3.93**	**O**	

Table 5 shows the level of participation on physical activity in school.

The respondents assessed "always" on physical activity as sitting manifested in its high mean value of 4.37 and ranked 1st while assessed "often" on sweating and fell tires after the activities with equal weighted mean of 3.67 and ranked 5.5th respectively. The computed mean of the responses towards physical activities was 3.93 with qualitative interpretation of "often".

When physical activity is used as a break from academic learning time, post engagement effects include better attention (Grieco, Jowers, Bartholomew, 2009 ; Bartholomew and Jowers, 2011), increased on-task behaviors (Mahar, Murphy, Rowe, Golden, Shields, Raedeke, 2006), and improved academic performance (Donnelly and Lambourne, 2011). Comparisons between 1st-grade students housed in a classroom with stand-sit desks where the child could stand at his/her discretion and in classrooms containing traditional furniture showed that the former children were highly likely to stand, thus expending significantly more energy than those who were seated (Benden, Blake, Wendel, Huber,2011). More important, teachers can offer physical activity breaks as part of a supplemental curriculum or simply as a way to reset student attention during a lesson (Kibbe, Hackett, Hurley, McFarland, Schubert, Schultz, Harris, 2011) and when provided with minimal training can efficaciously produce vigorous or moderate energy expenditure in students (Stewart, Dennison, Kohl, Doyle, 2004). Further, after-school physical activity programs have demonstrated the ability to improve cardiovascular endurance, and this increase in aerobic fitness has been shown to mediate improvements in academic performance (Fredericks, Kokot, Krog,2006) as well as the allocation of neural resources underlying performance on a working memory task (Kamijo, Pontifex, O'Leary, Scudder, Wu, Castelli, Hillman, 2011).

Assessment on Physical Daily Activities

Table 6. Assessment on Physical Daily Activities

	Physical Daily Activities	Frequency	Percent
1	Sedentary	9	3.20
2	Light	59	21.20
3	Moderate	117	42.10
4	Vigorous	68	24.50
5	High	25	9.00
	Total	**278**	**100.00**

Table 6 shows the personal assessment towards physical daily activities.

Out of two hundred seventy eight student-respondents, there were 9 or equivalent to 3.20% who renders sedentary physical daily activities; 59 or 2120%, light; 117 or 42.10%, moderate; 68 or 24.50%, vigorous and 25 or 9.00%, high.

The table obviously shows that the respondents render moderate or adequate physical exercise. From 30 to 1 hour physical exercises that may assure fat and carbohydrates were burn out is enough for the respondents.

Clinical and public health guidelines indicate that youth need a minimum of 60 minutes per day of vigorous- or moderate-intensity physical activity to optimize health and development. Unless they take a nap or lie down to rest, all people are physically active from the time they get up in the morning until they go to bed at night. Physical activity is a necessary part of everything people do at home, work, or school; while going from place to place; and during leisure time. Few people in the United States, whether adults or children, expend a great deal of energy during physical activity, but they are always expending some. In the still-emerging field of physical activity and public health, physical activity is commonly defined as "any bodily movement produced by skeletal muscles that result in energy expenditure" (Caspersen, Powell, Christenson, 1985).

Assessment on the amount of time spend for moving

Table 7 shows the personal assessments towards amount of time spend for moving every day.

Mainly of the two hundred seventy eight student-respondents, there were 22 or equivalent to 7.90% spend less than (<) 5 minutes every day; 92 or 33.10%, spend 5-15 minutes moving; 99 or 35.60%, 15-30 minutes moving;

5 or 20.105, 30-45 minutes moving and 9 or 3.20%, more than (>) 45 minutes moving.

Exercise provides many physical benefits. It "helps the body build muscles, prevent heart disease and depression, reduce stress and anxiety, and may even lengthen one's life expectancy" (Carmichael, 2007). Physical fitness has been found to prolong longevity, increase bone health, and decrease depression and anxiety levels. To maintain physical fitness levels, Action for Healthy Kids suggested that physical education be included daily as part of the school curriculum (AFHK, 2006) and (Gordon-Larsen, McMurry, & Popkin, 2000).

Table 7. Assessment on the Amount of Time Spend for Moving

	Time Moving	Frequency	Percent
1	less than (<) 5 minutes	22	7.90
2	5-15 minutes	92	33.10
3	15-30 minutes	99	35.60
4	30-45 minutes	56	20.10
5	More than (>) 45 minutes	9	3.20
	Total	**278**	**100.00**

Assessment on Sports *Activities*

Table 8. Assessment on Sports Activities

Sports Activities	Frequency (f)	Percentage (%)
YES	106	38.13
NO	172	61.87
Total	**278**	**100.00**

Table 8 shows the personal assessment on rendering sports activities.

With the two hundred seventy eight student-respondents, there were 106 or equivalent to 38.13% who responded "affirmative" on having practice while 172 or 61.87% responded negative or "no" for practice on sports.

Few schools require daily physical education, and only 26 % of high schools require three or more years of physical education for graduation. Physical education participation by high school students has fallen, thus indicating a sharp decline in either student interest or program availability. Many school systems struggle with the decision to eliminate physical education from their curriculum of the repercussions of those decisions. Decreased physical fitness levels, overweight, and obesity often result when students have few opportunities to be physically active; these physical symptoms often impact student motivation, thinking, and learning. (Siegel, 2006).

Level of Sports Activities

Table 9. Assessment on the Level of Sports Activities

Level of Sports Activities		YES		NO		Total
		(f)	(%)	(f)	(%)	
Low	Yoga, billiards, soft aerobics, bowling, fishing, hunting, walking or bicycling at regular pace	136	48.92	142	51.08	278
Medium	Gym, riding, aerobics, dancing, badminton, golf, brisk walking or bicycling	141	50.70	137	49.30	278

Level of Sports Activities		YES		NO		Total
		(f)	(%)	(f)	(%)	
High	Soccer, rugby, running, skating (roller blades), tennis, swimming, basketball, hockey	95	34.17	183	65.83	278

Table 9 shows the personal assessment of the respondents towards level of sports activities.

For the most part two hundred seventy eight student-respondents, there were 136 or equivalent to 48.92% while 142 or 51.08% who respondent negatively assessed low sports activities like yoga, billiards, soft aerobics, bowling, fishing, hunting, walking or bicycling at regular pace. There were 141 or 50.70% responded "affirmative" and 137 or 49.30% responded "negative" on medium like aerobics, dancing, badminton, golf, brisk walking or bicycling. There were 95 or 34.175 who responded "affirmative" and 183 or 65.83% responded "negative" on high level of sports practice like soccer, rugby, running, skating, tennis, swimming, basketball and hockey.

Early research in South Australia focused on quantifying the benefits of physical activity and physical education during the school day; the benefits noted included increased physical fitness, decreased body fat, and reduced risk for cardiovascular disease (Dwyer, Coonan, Worsley, Leitch, 1979; Dwyer, Coonan, Leitch, Hetzel, Baghurst, 1983). Even today, Dwyer and colleagues are among the few scholars who regularly include in their research measures of physical activity intensity in the school environment, which is believed to be a key reason why they are able to report differentiated effects of different intensities.

Assessment towards Activities Engaged at Home

Table 10. Assessment of the Respondents towards Activities Engaged at Home

	Activities Engaged at Home	5 A	4 O	3 So	2 Se	1 N	WM	QI	Rank
1	I sit watching television/ in front of my computer or I listen to music or read.	109 (545)	59 (326)	52 (156)	34 (68)	24 (24)	**3.70**	**O**	**4**
2	I walk (alone, with family/friends, with my dog)	115 (575)	92 (368)	52 (156)	13 (26)	6 (6)	**4.07**	**O**	**1**
3	I do physical work (Do it Yourself), gardening shopping)	85 (425)	81 (324)	73 (219)	24 (48)	15 (15)	**3.71**	**O**	**3**
4	Besides my regular sport, I practice my other sport	68 (340)	76 (304)	70 (210)	38 (76)	26 (26)	**3.44**	**O**	**5**
5	I sweat (when gardening , walking, DIY)	90 (40)	84 (336)	62 (186)	21 (42)	21 (21)	**3.72**	**O**	**2**
	Overall Weighted Mean						**3.73**	**O**	

Table 10 shows the personal assessment of the respondents towards activities engaged at home.

The respondents perceived "often" on walking alone, with family/friends, with my dog with weighted mean of 4.07; while least on indicator "Besides my regular sport, I practice my other sport", with mean of 3.44 and was good to ranked 5th. The computed overall weighted mean on the responses was 3.73 with qualitative interpretation of "often".

Children respond faster and with greater accuracy to a variety of cognitive tasks after participating in a session of physical activity (Tomporowski, 2003; Budde, Voelcker-Rehage, S-Pietrabyk Kendziorra, Ribeiro, Tidow,2008;

Hillman, Pontifex, Raine, Castelli, Hall, Kramer, 2009; Pesce, Crova, Cereatti, Casella, Bellucci, 2009; Ellemberg and St-Louis-Deschênes, 2010). A single bout of moderate-intensity physical activity has been found to increase neural and behavioral concomitants associated with the allocation of attention to a specific cognitive task (Hillman et al., 2009; Pontifex, Scudder, Drollette, Hillman, 2012). And when children who participated in 30 minutes of aerobic physical activity were compared with children who watched television for the same amount of time, the former children cognitively outperformed the latter (Ellemberg and St-Louis-Desêhenes, 2010). Visual task switching data among 69 overweight and inactive children did not show differences between cognitive performance after treadmill walking and sitting (Tomporowski, Davis, Lambourne, Gregoskis, Tkacz, 2008b).

Assessment on the Leisure Activities at Home

Table 11 shows the personal assessment of the respondents comparing self to others at home.

There were 13 or equivalent to 4.70% who renders sedentary leisure activity among of two hundred seventy eight student-respondents,; 55 or 19.80%, light leisure activity; 113 or 40.60%, moderate; 69 or 24.80, vigorous and 28 or 10.10% high leisure activity.

Table 11. Assessment of the Respondents towards comparing Self to Others as to use of Leisure Activities at Home

	Leisure Activity at Home	Frequency	Percent
1	Sedentary	13	4.70
2	Light	55	19.80
3	Moderate	113	40.60
4	Vigorous	69	24.80
5	High	28	10.10
	Total	**278**	**100.00**

Some have expressed concern that introducing physical activity outside the classroom setting may be distracting to students. Yet in one study it was sedentary students who demonstrated a decrease in time on task, while active students returned to the same level of on-task behavior after an active learning task (Grieco et al., 2009).

3.2. Assessment on Health Practices

Table 12 shows the personal assessment of the respondent's health practices.

The respondents perceived "strongly agree" on the two indicators, "Diet should be well-balanced (including fruits, vegetables, cereals, breads, dairy products and good sources of protein.)", and "Three meals a day (Breakfast, Lunch, Dinner)", manifested in the weighted mean of 4.23 and 4.36 and was good to ranked 2nd and 1st respectively. The respondents "moderately agree" on skipping main meals with mean of 3.08 and ranked 9th. The computed overall weighted mean on the responses towards health status was 3.97 with qualitative interpretation of "agree".

Table 12. Health Practices of the Respondents
N=278

	Health Practices	WM	QI	Rank
1	Drinking enough fluids so that your urine is pale yellow color? (*Normal color of urine.*)	**4.01**	**A**	**6**
2	Do regular diet.	**3.88**	**A**	**8**
3	Minimize intake of sweets specially candy and carbonated drinks and avoid adding sugar to foods.	**3.99**	**A**	**7**

	Health Practices	WM	QI	Rank
4	Diet should be well-balanced (including fruits, vegetables, cereals, breads, dairy products and good sources of protein.)	**4.23**	**SA**	**2**
5	Limit intake of saturated fats (butter, cheese, cream, fatty meats)	**4.03**	**A**	**5**
6	Three meals a day (Breakfast, Lunch, Dinner)	**4.36**	**SA**	**1**
7	Three meals and am/pm snacks.	**4.12**	**A**	**3**
8	Skipping main meals.	**3.08**	**MA**	**9**
9	Normal Body mass index is a goal.	**4.05**	**A**	**4**
	Overall Weighted Mean	**3.97**	**A**	

Tripp and Choi, 2015, based on the perceptions of childhood obesity in the community. There were also distinct differences in the aspects of the practices that each group focused on for children's healthy eating and physical activities. Their practices seemed to be influenced by their perceptions of childhood obesity. Challenges for addressing childhood obesity are identified.

4. Level of Knowledge of Fitness, Physical Activity and Health Practices

Table 13 shows the personal assessment of the respondent's towards the level of knowledge of fitness, physical activity and health practices.

Table 13. Level of Knowledge of Fitness, Physical Activity and Health Practices N=278

	Level of Knowledge of Fitness, Physical Activity and Health Practices	WM	QI	Rank
1	Carbohydrates are not as easily and rapidly digested as protein and fats.	4.21	VMA	2.5
2	Protein is the primary source of muscular energy of athlete.	4.10	A	10
3	No more than 15% of calories in the diet should be provided by fats.	3.94	A	16
4	Adequate calcium intake is necessary for female athletes of all ages to prevent osteoporosis.	4.00	A	14.5
5	Two 8 – ounce glasses of milk per day are enough to meet the recommended amount of calcium.	4.00	A	14.5
6	A lack of iron in the diet can result to fatigue, injury and illness.	4.01	A	13
7	Vitamin supplementation is recommended for all physical active persons.	4.21	VMA	2.5
8	Vitamins are goof source of energy.	4.19	A	4
9	The body can synthesize the Vitamin D upon exposure to the sun.	4.05	A	12
10	Two servings of vegetables per day fulfil recommended dietary allowances.	4.09	A	9
11	Natural and organic foods are more nutritious than foods grown under conventional methods.	4.22	VMA	1
12	During activity, thirst is an adequate guide to the need of fluids.	4.14	A	8
13	Sports drinks are the best way to replace body fluids lost during exercise.	4.06	A	11
14	An athlete involved in endurance events (distance running) should follow a considerably different diet than one participating in events of short duration (sprinting).	3.85	A	17
15	A physical fit person eating a nutritionally adequate diet can improve her performance by consuming great amount of nutrients.	4.18	A	5.5
16	The type of food a student eats affects her/his academic performance.	4.18	A	5.5
17	Being fit can improve academic performance.	4.16	A	7
	Overall Weighted Mean	4.09	A	

The respondents "very much agree" on three (3) indicator particularly on "Natural and organic foods are more nutritious than foods grown under conventional methods" manifested in its mean value of 4.22 and was good to ranked 1st. Perceived "agree" on indicator that "An athlete involved in endurance events (distance running) should follow a considerably different diet than one participating in events of short duration (sprinting)" manifested in the weighted mean value of 3.85 and ranked 17th. The computed overall weighted mean on the responses towards Level of Knowledge of Fitness, Physical Activity and Health Practices was 4.09 with qualitative interpretation of "agree".

Take 10! A thorough examination of a similar in-class, academically oriented physical activity program. —was done after it had been in use for ten years to determine the consequences of its implementation (Kibbe, Hackett, Hurley, McFarland, Schubert, Schultz, Harris, 2011). The data suggest that students who participated in Take 10 in the classroom had lower BMIs and engaged in moderate to vigorous physical activity (6.16 to 6.42 METs). Furthermore, children participating in the Take 10! Reed, Einstein, Hahn, Hooker, Gross, and Kravitz (2010) found that classrooms had greater fluid intelligence and academic achievement scores (Donnelly, Greene, Gibson, Smith, Washburn, Sullivan, DuBose, Mayo, Schmelzle, Ryan, 2009).

According to Groppel (2011), prompt action is required if we are to have any real hope in curbing, and perchance even preventing, the predictable and catastrophic consequences of obesity. The field of sport science demonstrates how it is possible to harness the power of story method as an effective strategy for behavior change. We can rewrite our story and develop an effective action plan for meaningful change. In other words, we can--one day at a time--change the story of our nation from one of inactivity and obesity to one of physical fitness, regular activity throughout one's day, academic achievement, and good health!

5. Test of Differences on the level of participation to sports activities

Table 14. Analysis of Variance to Test the Differences on the Level of Participation to Sports Activities

Test of Differences	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Organized Sports	75.967	277	.000	1.80576	1.7590	1.8525
Unorganized Sports	36.255	277	.000	1.5863	1.500	1.672

Table 14 shows the analysis of variance to test the differences on the participation to sports activities.

The computed t-test P-value of 0.000 which is lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of participation to sports between organized and unorganized physical activity.

The statistics clearly demonstrates the differences or advantages that the two pursuits give. Basch's (2010) paper draws on empirical evidence to show that school reform will be ineffective unless children's health is prioritized. Basch believes that schools may be the only location where health imbalances can be addressed, and that if children's basic health requirements are not met, they will struggle to learn no matter how good the teaching tools employed are. The results of these studies should be viewed with caution because several of their designs failed to account for the level of participation in the sport by individuals (e.g., amount of playing time, type and intensity of physical activity engagement by sport). Offering sports opportunities is justified regardless of the cognitive benefits, given that adolescents who participate in sports or other extracurricular activities are less likely to engage in risky behaviors (Elder, Leaver-Dunn, Wang, Nagy,

Green, 2000; Taliaferro, Rienzo, Donovan, 2010), that participation in sports improves physical fitness, and that affiliation with sports improves school connectedness (Elder, Leaver-Dunn, Wang, Nagy, Green, 2000; Taliaferro,

It can be said that healthier students are improved learners. School health programs and sports activities that are substantiated and deliberately planned to influence academic achievement, and effectively coordinated will justify a consistent resourcefulness of the school towards the development of students.

6. Test of Differences on level of participation as cited in problem #4 when grouped according to profile variables

6.1. Physical Activities

Table 15 shows the Analysis of Variance to test differences on the level of participation as to physical activities when grouped according to profile variables.

The computed P or Significant Values of 0.022, 0.004 and 0.000 which are lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of awareness and knowledge as to Physical Activities when grouped according to age, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of sex, height and weight are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of awareness and knowledge as to Physical Activities.

Table 15. Analysis of Variance to Test Differences on the Level of Participation as to Physical Activities when grouped according to Profile Variables

Sources of Variations		SS	Df	MS	Sig.	Decision
Age	Between Groups	5.283	5	1.057	.022	**Reject Ho**
	Within Groups	106.771	272	.393		**Significant**
	Total	112.054	277			
Sex	Between Groups	.981	1	.981	.120	Accept ho
	Within Groups	111.073	276	.402		Not Significant
	Total	112.054	277			
Height	Between Groups	5.165	8	.646	.118	Accept ho
	Within Groups	106.889	269	.397		Not Significant
	Total	112.054	277			
Weight	Between Groups	3.205	4	.801	.093	Accept ho
	Within Groups	108.849	273	.399		Not Significant
	Total	112.054	277			
Body mass Index	Between Groups	5.226	3	1.742	.004	**Reject Ho**
	Within Groups	106.828	274	.390		**Significant**
	Total	112.054	277			
Family Monthly Income	Between Groups	8.276	2	4.138	.000	**Reject Ho**
	Within Groups	103.778	275	.377		**Significant**
	Total	112.054	277			

The data provide clear manifestation on the deviance and opposition of opinion towards physical activities. It is noted that there are people who are cautious on healthy living while other are not. There are those incline with

sports while other are engaging in other multiple intelligences.

Health is a vital moderating factor in a child's ability to learn. The idea that healthy children learn better is empirically supported and well accepted (Basch, 2010), and multiple studies have confirmed that health benefits are associated with physical activity, including cardiovascular and muscular fitness, bone health, psychosocial outcomes, and cognitive and brain health (Strong, Malina, Blimkie, Daniels, Dishman, Gutin, Hergenroeder, Must, Nixon, Pivarnik, Rowland, Trost, Trudeau, 2005). Given that the brain is responsible for both mental processes and physical actions of the human body, brain health is important across the life span. In adults, brain health, representing absence of disease and optimal structure and function, is measured in terms of quality of life and effective functioning in activities of daily living. In children, brain health can be measured in terms of successful development of attention, on-task behavior, memory, and academic performance in an educational setting.

6.2. Leisure Time at Home

Table 16 shows the Analysis of Variance to test differences on the level of participation as to leisure time at home when grouped according to profile variables.

Table 16. Analysis of Variance to Test Differences on the Level of Participation as to Leisure Time at Home when grouped according to Profile Variables

Sources of Variations		SS	Df	MS	Sig.	Decision
Age	Between Groups	5.842	5	1.168	0.139	Accept ho
	Within Groups	165.158	238	0.694		Not Significant
	Total	170.999	243			
Sex	Between Groups	.769	1	0.769	0.297	Accept ho
	Within Groups	170.230	242	0.703		Not Significant
	Total	170.999	243			
Height	Between Groups	6.986	8	0.873	0.270	Accept ho
	Within Groups	164.013	235	0.698		Not Significant
	Total	170.999	243			
Weight	Between Groups	3.760	4	0.940	0.255	Accept ho
	Within Groups	167.240	239	0.700		Not Significant
	Total	170.999	243			
Body mass Index	Between Groups	5.987	3	1.996	0.036	**Reject Ho**
	Within Groups	165.013	240	.688		**Significant**
	Total	170.999	243			
Family Monthly Income	Between Groups	4.041	2	2.021	0.056	Accept ho
	Within Groups	166.958	241	0.693		Not Significant
	Total	170.999	243			

The computed P or Significant Values of 0.036 which is lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of awareness and knowledge as to Leisure Time when grouped according to body mass index profile variables respectively. On the other hand, the profile variables of age, sex, height, weight and family monthly income are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of participation as to leisure time at home.

The data provides clear manifestation on the opposition of perspective towards leisure time at home when grouped according to body mass index, Noted in the physical activities that more of the respondents are conducting sitting physical activities where enjoy most of texting, playing mobile games and Facebook. As observed, children nowadays are so indulged with the deskbound activities as a result of the

emergence of gadgets and other implements of new technologies.

Moreover, children with low muscle strength may be at risk of fracture with exercise (Clark, Tobias, Murray, Boreham, 2011). They pointed out that fracture rates during childhood are high and the incidence of childhood fractures appears to be increasing for nameless reasons. Physical activity, as evaluated by questionnaires, has been shown to be associated with an increased risk of fractures, and is the strongest predictor of childhood fracture risk found so far.

However, the higher bone mass associated with increased physical activity does not completely compensate for the risk of fracture caused by increased exposure to injuries. This may in part be due to the differing effects of exercise types on muscle mass or strength. (Clark, et al., 2011)

6.3. Health Practices

Table 17. Analysis of Variance to test Differences on the Level of Participation as to Health Practices when grouped according to Profile variables

Sources of Variations		SS	Df	MS	Sig.	Decision
Age	Between Groups	8.817	5	1.763	0.012	**Reject Ho**
	Within Groups	160.651	271	.593		**Significant**
	Total	169.468	276			
Sex	Between Groups	.004	1	.004	0.937	Accept ho
	Within Groups	169.464	275	.616		Not Significant
	Total	169.468	276			
Height	Between Groups	5.749	8	.719	0.313	Accept ho
	Within Groups	163.719	268	.611		Not Significant
	Total	169.468	276			
Weight	Between Groups	1.967	4	.492	0.527	Accept ho
	Within Groups	167.501	272	.616		Not Significant
	Total	169.468	276			
Body mass Index	Between Groups	5.426	3	1.809	0.031	**Reject Ho**
	Within Groups	164.042	273	.601		**Significant**
	Total	169.468	276			
Family Monthly Income	Between Groups	23.286	2	11.643	0.000	**Reject Ho**
	Within Groups	146.182	274	.534		**Significant**
	Total	169.468	276			

Table 17 shows the analysis of Variance to test differences on the level of participation as to health practices when grouped according to profile variables.

The computed P or Significant Values of 0.012, 0.031, and 0.000 which are lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of participation as to health practices when grouped according to age, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of sex, height, and weight profile variables are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of participation as to health practices.

Another research according to Herbert, Patrick; Lohrmann, David, Hall, Cougar (2017), health promotion programs for school staff are an overlooked and under-utilized resource that

can lead to reductions in overweight and obesity among teachers and other staff members if implemented properly. In addition to increasing the overall staff wellness, boosting morale, increasing productivity, improving academic achievement, providing healthy role models for children, and, most importantly, reducing overweight and obesity, schools can achieve financial cost reductions similar to those found in other types of worksites. To enhance effectiveness, therefore, schools should consider focusing obesity prevention efforts on current employees as well as students.

Cardiorespiratory endurance, muscular strength and endurance, flexibility, and body composition are components of health-related fitness historically assessed in school-based fitness assessment programs (IOM, 2012a). These components of health-related fitness are considered important since they can be linked to the risk of cardio-metabolic disease and musculoskeletal disability, chronic hypokinetic-related diseases. Furthermore, cardiorespiratory (aerobic) endurance reflects the functioning of the pulmonary and cardiovascular systems to deliver oxygen and the capability of tissues (primarily skeletal muscle) to extract oxygen from the blood. In practice it is usually measured indirectly as performance on a field test of stamina.

7. Test of Differences on the on the perception / assessment towards level of knowledge as cited in problem #5 when grouped according to profile variables?

Table 18. Analysis of Variance to Test Differences on the Perception / Assessment towards General Knowledge when grouped according to Profile Variables

Sources of Variations		SS	Df	MS	Sig.	Decision
Age	Between Groups	5.010	5	1.002	0.055	Accept ho
	Within Groups	124.343	272	0.457		Not Significant
	Total	129.353	277			
Sex	Between Groups	.650	1	0.650	0.239	Accept ho
	Within Groups	128.703	276	0.466		Not Significant
	Total	129.353	277			
Height	Between Groups	9.006	8	1.126	**0.012**	**Reject Ho**
	Within Groups	120.348	269	0.447		**Significant**
	Total	129.353	277			
Weight	Between Groups	6.261	4	1.565	**0.009**	**Reject Ho**
	Within Groups	123.092	273	0.451		**Significant**
	Total	129.353	277			
Body mass Index	Between Groups	8.010	3	2.670	**0.001**	**Reject Ho**
	Within Groups	121.344	274	0.443		**Significant**
	Total	129.353	277			
Family Monthly Income	Between Groups	15.644	2	7.822	**0.000**	**Reject Ho**
	Within Groups	113.709	275	0.413		**Significant**
	Total	129.353	277			

Table 18 shows the Analysis of Variance to test differences on the perception / assessment towards level of knowledge when grouped according to profile variables.

The computed P or Significant Values of 0.012, 0.009, 0.001 and 0.000 which are lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the overall level of awareness and knowledge when grouped according to height, weight, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of age, and sex, profile variables are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the perception towards the

overall level knowledge on fitness, physical activity and health practices.

(IOM, 2012a) Age- and sex-related changes in the components of both are strongly linked to the developmental changes in tissues and systems that occur during childhood and adolescence. Although genetic factors ultimately limit capacity, environmental and behavioral factors, including physical activity, interact with genes to determine the degree to which an individual's full capacity is achieved.

Similar to the findings of Castelli, Hillman, Buck, Erwin (2007), socioeconomic status and demographic factors explained little of the relationship between aerobic fitness and academic performance; however, socioeconomic status may be an explanatory variable for students of low fitness (London and Castrechini, 2011).

Summary, Conclusions and Recommendations

This chapter presents the gathered and processed data using tabular form analyzed and provide interpretation so as give a better and clear understanding on the problems posited in the earlier Chapter 1.

1. Profile of the Respondents

1.1. Age. Out of two hundred seventy eight student-respondents, there were 65 or equivalent to 23.40% are from age group of 14 years old; 29 or 10.40%, 15 years old; 111 or 39.90%, 16 years old; 4 or 1.40%, 17 years old; 34 or 12.20%, 18 years old and 35 or 12.60%, from 19 years old and above.

1.2. Sex. Most of the two hundred seventy eight student-respondents, there were 109 or equivalent to 39.20% are males and 169 or 60.80% are females.

1.3. Height. Mainly of the two hundred seventy eight student-respondents, there were 5 or equivalent to 1.80% with height of 1.20-1.27 meters; 4 or 1.40%, 1.28-1.35 meters and 1.84-1.91 meters respectively; 13 or 4.70%, 1.36-1.43 meters; 95 or 34.20%, 1.44-1.51 meters; 99 or 35.60%, 1.52-1.59 meters; 46 or 16.50%, 1.60-1.67 meters; 9 or 3.20%, 1.68-1.75 meters; and 3 or equivalent to 1.10%, with 1.76-1.83 meters.

1.4. Height. From the most part of two hundred seventy eight student-respondents, there were 69 or equivalent to 24.80% with kilograms weights of 30-40 kilograms;157 or 56.50%, 41-50 kilograms; 49 or 17.60%, with 51-60 kilograms; 2 or 0.70%, 61-70 kilograms and only 1 or 0.40% with 81-90 kilograms.

1.5. Family Monthly Income. Out of two hundred seventy eight student-respondents, there were 79 or equivalent to 28.40% with low family income of Php0.00-Php11,914.50; 178 or 64.00%, moderate income ranges from Php11,915.00 to Php49,526.00; and 21 or 7.60% with high income from Php50,000 and above.

1.6. Body Mass Index. Mainly of two hundred seventy eight student-respondents, there were 13 or equivalent to 4.70% classified as obese (30.00-24.90) body index; 182 or 65.50% are normal which ranges form (1850-24.90) body index; 19 or 6.80% as overweight ranges from (25.00-29.90) body mass index; and 64 or equivalent to 23.00%, classified as underweight which ranges from (<18.50) body index.

2. Level of Sports Activities

For organized sports. Out of two hundred seventy eight student-respondents, there were 55 or equivalent to 19.80% who responded affirmative while 223 or 80.20% who responses negatively in participating organized sports.

For Unorganized sports. Mostly of two hundred seventy eight student-respondents, there were 75 or equivalent to 26.98% who responded affirmative while 203 or 74.82% who responses negatively in participating in unorganized sports.

3. Level of Participation to Physical Fitness

3.1. Physical Activities. The respondents assessed "always" on physical activity as sitting manifested in its high mean value of 4.37 and ranked 1st while assessed "often" on sweating and feel tires after the activities with equal weighted mean of 3.67 and ranked 5.5th respectively. The compute mean of the responses towards physical activities was 3.93 with qualitative interpretation of "often".

Assessment on Physical Daily Activities

Out of two hundred seventy eight student-respondents, there were 9 or equivalent to 3.20% who renders sedentary physical daily activities; 59 or 2120%, light; 117 or 42.10%, moderate; 68 or 24.50%, vigorous and 25 or 9.00%, high.

Assessment on the amount of time spend for day moving

From the most part of two hundred seventy eight student-respondents, there were 22 or equivalent to 7.90% spend less than (<) 5 minutes every day; 92 or 33.10%, spend 5-15 minutes moving; 99 or 35.60%, 15-30 minutes moving; 5 or 20.105, 30-45 minutes moving and 9 or 3.20%, more than (>) 45 minutes moving

Assessment on Sports Activities

Mainly of two hundred seventy eight (278) student-respondents, there were 106 or equivalent to 38.13% who responded "affirmative" on having practice while 172 or 61.87% responded negative or "no" for practice on sports.

Level of Sports Activities

There were 136 or equivalent to 48.92% while 142 or 51.08% who respondent negatively assessed low sports practice like yoga, billiards, soft aerobics, bowling, fishing, hunting, walking or bicycling at regular pace among two hundred seventy eight student-respondents. On the other hand, there were 141 or 50.70% responded "affirmative" and 137 or 49.30% responded "negative" on medium like aerobics, dancing, badminton, golf, brisk walking or bicycling. Moreover, there were 95 or 34.175 who responded "affirmative" and 183 or 65.83% responded "negative" on high level of sports practice like soccer, ruby, running, skating, tennis, swimming, basketball and hockey.

3.2. Assessment towards activities engaged at home. The respondents perceived "often" on walking alone, with family/friends, with my dog with weighted mean of 4.07 and was good to ranked 1st; while least on indicator "Besides my regular sport, I practice my other sport", with mean of 3.44 and was good to ranked 5th. The computed overall weighted mean on the responses was 3.73 with qualitative interpretation of "often".

Assessment on the leisure activities at home

With two hundred seventy eight student-respondents, there were 13 or equivalent to 4.70% who renders sedentary leisure activity; 55 or 19.80%, light leisure activity; 113 or 40.60%, moderate; 69 or 24.80, vigorous and 28 or 10.10% high leisure activity.

3.3. Assessment on Health Practices. The respondents perceived "strongly agree" on the two indicators, "Diet should be well-balanced (including fruits, vegetables, cereals, breads, dairy products and good sources of protein.)", and "Three meals a day (Breakfast, Lunch, Dinner)", manifested in the weighted mean of 4.23 and 4.36 and was good to ranked 2nd and 1st respectively. The respondents perceived "moderately agree" on skipping main meals with mean of 3.08 and ranked 9th. The computed overall weighted mean on the responses towards health status was 3.97 with qualitative interpretation of "agree".

4. Level of Knowledge of Fitness, Physical Activity and Health Practices.

The respondents perceived "very much agree" on three indicator particularly on "Natural and organic foods are more nutritious than foods grown under conventional methods" manifested in its mean value of 4.22 and was good to ranked 1st. Perceived "agree" on indicator that "An athlete involved in endurance events (distance running) should follow a considerably different diet than one participating in events of short duration (sprinting)" manifested in the weighted mean value of 3.85 and ranked 17th. The computed overall weighted mean on the responses towards General Knowledge of Fitness, Physical Activity and Health Status was 4.09 with qualitative interpretation of "agree".

5. Test of Differences on the level of participation to sports activities.

The computed t-test P-value of 0.000 which is lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on

the level of participation to sports between organized and unorganized physical activity.

6. Test of Differences on level of participation as cited in problem #4 when grouped according to profile variables

6.1. Physical Activities. The computed P or Significant Values of 0.022, 0.004 and 0.000 which are lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of awareness and knowledge as to Physical Activities when grouped according to age, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of sex, height and weight are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of awareness and knowledge as to Physical Activities.

6.2. **Leisure Time at Home.** The computed P or Significant Values of 0.036 which is lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of awareness and knowledge as to Leisure Time when grouped according to body mass index profile variables respectively. On the other hand, the profile variables of age, sex, height, weight and family monthly income are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of awareness and knowledge as to Leisure Time.

6.3. **Health Practices.** The computed P or Significant Values of 0.012, 0.031, and 0.000 which are lower than (<)0.05 Alpha Level of Significance, therefore the Null Hypothesis is Rejected, hence there is significant difference on the level of awareness and knowledge as to Health status when grouped according to age, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of sex, height, and weight profile variables are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the level of awareness and knowledge as to Health Practices.

7. Test of Differences on the on the perception / assessment towards general knowledge as cited in problem #5 when grouped according to profile variables.

The computed P or Significant Values of 0.012, 0.009, 0.001 and 0.000 which are lower than (<) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is rejected, hence there is significant difference on the overall level of awareness and knowledge when grouped according to height, weight, body mass index and family monthly income profile variables respectively. On the other hand, the profile variables of age, and sex, profile variables are higher than (>) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is Accepted, hence there is no significant difference on the perception towards the overall level knowledge on fitness, physical activity and health practices.

Conclusion

Based on the summary of the investigations conducted, the researcher has concluded that:

1. The respondent is a typical female in her early teen-age hood, with average height, weight, normal body mass index and inadequate family monthly income.
2. The respondents assessed "negative" for both organized and unorganized sports activities.
3. The respondents assessed "often" with moderate physical activities, with 15-30 minutes moving a day and medium in the conduct of aerobic or Zumba while "agree" on the health practices.
4. The respondents perceived "agree" on the overall general knowledge and awareness on fitness, physical activities and health practices.
5. There is significant difference between the organized and unorganized sports activity.
6. There is significant difference when grouped according to age, body mass index and family income respectively towards physical activity and health practices while significant on body mass index towards leisure time.
7. There is significant difference when grouped according to height, weight, body mass index

and family monthly income towards overall general knowledge and awareness on fitness, physical activity and health practices.

Recommendation

Based on summary of the investigation conducted and the conclusions arrived at the researcher have offered the following recommendations to wit:

1. Consider healthy body a great treasure and start engaging in physical activities that help and regulate good sound and healthy body instead of engaging in activities as drinking liquor or smoking that may cause severe illness or death.
2. Encourage the respondents not to skip meals for better life and healthy body.
3. Seek advises from health professional or medical doctors before engaging heavy sports activities to assure rendering from gradual to complex physical activities.
4. A physical fit person eating a nutritionally adequate diet can have improved performance in school.
5. In order to improve quality of life, one must practice and observe healthy living.
6. To conduct a parallel or similar study with comprehensive and extensive latitude so as to validate and confirm the findings obtained in the study

References

Åberg MA, Pedersen NL, Torén K, Svartengren M, Bäckstrand B, Johnsson T, Cooper-Kuhn CM, Åberg ND, Nilsson M, Kuhn HG. (2009).Cardiovascular fitness is associated with cognition in young adulthood. Proceedings of the National Academy of Sciences of the United States of America;106(49):20906–20911.

Action for Healthy Kids (AFHK). (2006).A crucial juncture in the fight against childhood obesity. http://www.actionforhealthykids.org/storage/documents/AFHK_Annual_Report_2005-2006_FINAL.pdf.

Aggarwal, Y.P. (2008). Statistics of Education. 2nd Edition. Delhi: Sterling. http://www.ijtbm.com

Ahlqwist, A., M. Hagman, G. Kjellby-Wendt, and E. Beckung. (2008). Physical therapy treatment of back complaints on children and adolescents. Spine 33(20):E721-E727.

Annesi, J. J., W. L. Westcott, A. D. Faigenbaum, and J. L. Unruh. (2005). Effects of a 12-week physical activity protocol delivered by YMCA after-school counselors (Youth Fit for Life) on fitness and self-efficacy changes in 5-12-year-old boys and girls. Research Quarterly for Exercise and Sport 76(4):468-476.

Balagopal, P., D. George, N. Patton, H. Yarandi, W. L. Roberts, E. Bayne, and S. Gidding. (2005). Lifestyle-only intervention attenuates the inflammatory state associated with obesity: A randomized controlled study in adolescents. Journal of Pediatrics 146(3):342-348.

Baquet, G., E. Van Praagh, and S. Berthoin. (2003). Endurance training and aerobic fitness in young people. Sports Medicine 33(15):1127-1143.

Baquet, G., S. Berthoin, G. Dupont, N. Blondel, C. Fabre, and E. Van Praagh. (2002). Effects of high intensity intermittent training on peak VO(2) in prepubertal children. International Journal of Sports Medicine 23(6):439.

Barbeau, P., M. H. Johnson, C. A. Howe, J. Allison, C. L. Davis, B. Gutin, and C. R. Lemmon.(2007). Ten months of exercise improves general and visceral adiposity, bone, and fitness in black girls. Obesity 15(8):2077-2085.

Barlow, S. (2007). Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. Pediatrics 120(S4):S164-S192.

Bar-Or, O. (1983). Pediatric sports medicine for the practitioner. New York: Springer-Verlag.

Barros RM, Silver EJ, Stein REK.(2009). School recess and group classroom behavior. Pediatrics;123(2):431–436.

Bartholomew JB, Jowers EM. (2011).Physically active academic lessons in elementary children. Preventive Medicine.;52(Suppl 1):S51–S54.

Basch C. (2010).Healthier children are better learners: A missing link in school reforms to close the achievement gap.

Bedouet, M, Vol, S, Gusto, G, Leglu, C, Beslin, E, Decou, P, Negre, E, Planage, B, Chazhetelle, E, Mercier, F, Lantieri, O, Tichet, J. (2011). Evaluating Physical Activity:The AQAP questionnaire and its interpretation software.Volume 54.Issue 8: 478-495.

Bell, L. M., K. Watts, A. Siafarikas, A. Thompson, N. Ratnam, M. Bulsara, J. Finn, G. O'Driscoll, D. J. Green, and T. W. Jones. (2007). Exercise alone reduces insulin resistance in obese children independently of

changes in body composition. Journal of Clinical Endocrinology & Metabolism 92(11):4230-4235.

Benden ME, Blake JJ, Wendel ML, Huber JC Jr. (2011).The impact of stand-biased desks in classrooms on calorie expenditure in children. American Journal of Public Health.;101(8):1433–1436.

Benson, A. C., M. E. Torode, and M. A. Fiatarone Singh. (2007). A rationale and method for high-intensity progressive resistance training with children and adolescents. Contemporary Clinical Trials 28(4):442-450.

Berkey, C. S., H. R. Rockett, A. E. Field, M. W. Gillman, A. L. Frazier, C. A. Camargo, and G. A. Colditz. (2000). Activity, dietary intake, and weight changes in a longitudinal study of preadolescent and adolescent boys and girls. Pediatrics105(4):e56.

Berkey, C. S., H. R. Rockett, M. W. Gillman, and G. A. Colditz.(2003). One-year changes in activity and in inactivity among 10- to 15-year-old boys and girls: Relationship to change in body mass index. Pediatrics 111(4):836-843.

Biddle SJ, Asare M. (2011).Physical activity and mental health in children and adolescents: A review of reviews. British Journal of Sports Medicine.;45(11):886–895.

Boreham, C. A., I. Ferreira, J. W. Twisk, A. M. Gallagher, M. J. Savage, and L. J. Murray. (2004). Cardiorespiratory fitness, physical activity, and arterial stiffness: The Northern Ireland Young Hearts Project. Hypertension 44(5):721-726.

Budde H, Voelcker-Rehage C, S-Pietrabyk Kendziorra, Ribeiro P, Tidow G. (2008). Acute coordinative exercise improves attentional performance in adolescents. Neuroscience Letters. 441(2):219–223.

Burkhalter TM, Hillman CH. (2011). A narrative review of physical activity, nutrition, and obesity to cognition and scholastic performance across the human lifespan. Advances in Nutrition.;2(2):201S–206S.

Carrel, A. L., R. R. Clark, S. E. Peterson, B. A. Nemeth, J. Sullivan, and D. B. Allen. (2005). Improvement of fitness, body composition, and insulin sensitivity in overweight children in a school-based exercise program: A randomized, controlled study. Archives of Pediatrics and Adolescent Medicine 159(10):963.

Carmichael M.(2007). Let's get physical. Newsweek.149(20):62, 646,68.PMID:19130841

Caspersen, CJ, Powell, KE, and Christenson, GM.(1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. PMCID:PMC1424733.PMID: 3920711.100(2): 126–131.

Castelli DM, Hillman CH, Buck SM, Erwin HE. (2007). Physical fitness and academic achievement in third- and fifth-grade students. Journal of Sport and exercise Psychology,;29(2):239-252.

Chih CH, Chen JF. (2011).The relationship between physical education performance, fitness tests, and academic achievement in elementary school. International Journal of Sport and Society.;2(1):65–73.

Christodoulos, A. D., H. T. Douda, and S. P. Tokmakidis. (2012). Cardiorespiratory fitness, metabolic risk, and inflammation in children. International Journal of Pediatrics.

Church, T., C. Barlow, C. P. Earnest, J. Kampert, E. Priest, and S. Blair. (2002). Associations between cardiorespiratory fitness and C-reactive protein in men. Arteriosclerosis, Thrombosis, and Vascular Biology 22(11):1869-1876.

Clark, E. M, J. H. Tobias, L. Murray, and C. Boreham.(2011). Children with low muscle strength are at an increased risk of fracture with exposure to exercise. Journal of Musculoskeletal and Neuronal Interactions 11(2):196-202.

Clarke J, Fletcher B, Lancashire E, Pallan M, Adab P. (2013). The views of stakeholders on the role of the primary school in preventing childhood obesity: a qualitative systematic review. Obes Rev. Dec;14(12):975-88. doi: 10.1111/obr.12058.

Colcombe SJ, Kramer AF. (2003).Fitness effects on the cognitive function of older adults a meta-analytic study. Psychological Science.;14(2):125–130.

Committee on Sports Medicine Fitness. (2008). Strength training by children and adolescents. Pediatrics 107(6):1470-1472.

Cooper K, Everett D, Kloster J, Meredith MD, Rathbone M, Read K. (2010).Preface: Texas statewide assessment of youth fitness. Research Quarterly for Exercise and Sport.;81(3):ii.

Cottrell LA, Northrup K, Wittberg R. (2007).The extended relationship between child cardiovascular risks and academic performance measures. Obesity (Silver Spring);15(12):3170–3177.

Couturier L, Chepko S, Coughlin MA. (2005). Student Voices-What Middle and High School Students Have to Say about Physical Education.v62 n4 p170-177.

Daniels SR, Arnett DK, Eckel RH, Gidding SS, Hayman LL, Kumanyika S, Robinson TN, Scott BJ, Jeor SS, Williams CL. (2005).Overweight in children and adolescents: Pathophysiology, consequences, prevention, and treatment. Circulation. 111(15):1999–2012.

Davies PS, Gregory J, White A. (1995).Physical activity and body fatness in preschool children. International Journal of Obesity and Related Metabolic Disorders. 19(1):6.

Davis, C. L., N. K. Pollock, J. L. Waller, J. D. Allison, B. A. Dennis, R. Bassali, A. Meléndez, C. A. Boyle, and B. A. Gower. (2012). Exercise dose and diabetes risk in overweight and obese children: A randomized controlled trial. Journal of the American Medical Association 308 (11):1103-1112.

Depres JP, Lamarche B. (2000).Physical activity and the metabolic complications of obesity. Bouchard C, editor. Champaign, IL: Human Kinetics. pp. 331–354.

Dionne, I., N. Almeras, C. Bouchard, and A. Tremblay. (2000). The association between vigorous physical activities and fat deposition in male adolescents. Medicine and Science in Sports and Exercise 32:392-395.

Donnelly JE, Greene JL, Gibson CA, Smith BK, Washburn RA, Sullivan DK, DuBose K, Mayo MS, Schmelzle KH, Ryan JJ. (2009).Physical Activity Across the Curriculum (PAAC): A randomized controlled trial to promote physical activity and diminish overweight and obesity in elementary school children. Preventive Medicine.;49(4):336–341.

Donnelly JE, Lambourne K. (2011).Classroom-based physical activity, cognition, and academic achievement. Preventive Medicine.;52(Suppl 1):S36–S42.

Dubbose, K. D., J. C. Eisenmann, and J. E. Donnelly. (2007). Aerobic fitness attenuates the metabolic syndrome score in normal-weight, at-risk-for-overweight, and overweight children. Pediatrics 120(5):e1262-e1268.

Dwyer T, Coonan W, Worsley A, Leitch D. (1979).An assessment of the effects of two physical activity programmes on coronary heart disease risk factors in primary school children. Community Health Studies;3(3):196–202.

Dwyer T, Coonan WE, Leitch DR, Hetzel BS, Baghurst R. (1983).An investigation of the effects of daily physical activity on the health of primary school students in south Australia. International Journal of Epidemiology;12(3):308–313.

Edwards JU, Mauch L, Winkleman MR. (2011). Relationship of nutrition and physical activity behaviors and fitness measures to academic performance for sixth graders in a Midwest city school district. Journal of School Health.;81:65–73. Effects of high intensity intermittent training on peak VO(2) in prepubertal children.

Eisenmann, J. C. (2003). Secular trends in variables associated with the metabolic syndrome of North American children and adolescents: A review and synthesis. American Journal of Human Biology 15(6):786-794.

Eisenmann, J. C., G. J. Welk, M. Ihmels, and J. Dollman. (2007b). Fatness, fitness, and cardiovascular disease risk factors in children and adolescents. Medicine and Science in Sports and Exercise 39(8):1251.

Eisenmann, J., P. Katzmarzyk, L. Perusse, A. Tremblay, J. Despres, and C. Bouchard. (2005). Aerobic fitness, body mass index, and CVD risk factors among adolescents: The Quebec Family Study. International Journal of Obesity 29(9):1077-1083.

Ekelund, U., P. W. Franks, S. Sharp, S. Brage, and N. J. Wareham. (2007). Increase in physical activity energy expenditure is associated with reduced metabolic risk independent of change in fatness and fitness. Diabetes Care 30(8):2101-2106.

Ekelund, U., S. Brage, P. W. Franks, S. Hennings, S. Emms, and N. J. Wareham. (2005). Physical activity energy expenditure predicts progression toward the metabolic syndrome independently of aerobic fitness in middle-aged healthy Caucasians the Medical Research Council Ely Study. Diabetes Care 28(5):1195-1200.

Elder C, Leaver-Dunn D, Wang MQ, Nagy S, Green L. (2000).Organized group activity as a protective factor against adolescent substance use. American Journal of Health Behavior.;24(2):108–113.

Ellemberg D, St-Louis-Deschênes M. (2010).The effect of acute physical exercise on cognitive function during development. Psychology of Sport and Exercise.;11(2):122–126.

Ertek, S., and A. Cicero. (2012). Impact of physical activity on inflammation: Effects on cardiovascular disease risk and other inflammatory conditions. Archives of Medical Science 8(5):794.

Escalante, Y., J. M. Saavedra, A. García-Hermoso, and A. M. Domínguez. (2012). Improvement of the lipid profile with exercise in obese children: A systematic review. Preventive Medicine 54(5):293-301.

Esteban-Cornejo I, (2014). Independent and combined influence of the components of physical fitness on academic performance in youth. DOI: 10.1016/j.jpeds.2014.04.044.

Etnier JL, Nowell PM, Landers DM, Sibley BA. (2006).A meta-regression to examine the relationship between aerobic fitness and cognitive performance. Brain Research Reviews.;52(1):119–130.

Etnier JL, Salazar W, Landers DM, Petruzzello SJ, Han M, Nowell P.(1997).The influence of physical fitness and exercise upon cognitive functioning: A meta-analysis. Journal of Sport and Exercise Psychology;19(3):249–277.

Eveland-Sayers BM, Farley RS, Fuller DK, Morgan DW, Caputo JL. (2009).Physical fitness and academic achievement in elementary school children. Journal of Physical Activity and Health.;6(1):99.

Faigenbaum, A. D. (2007). State of the art reviews: Resistance training for children and adolescents: Are there health outcomes? American Journal of Lifestyle Medicine 1(3):190-200.

Faigenbaum, A. D., W. J. Kraemer, C. J. Blimkie, I. Jeffreys, L. J. Micheli, M. Nitka, and T. W. Rowland. (2009). Youth resistance training: Updated position statement paper from the National Strength and Conditioning Association. Journal of Strength and Conditioning Research 23(5 Suppl):S60-S79.

Farpour-Lambert, N. J., Y. Aggoun, L. M. Marchand, X. E. Martin, F. R. Herrmann, and M. Beghetti. (2009). Physical activity reduces systemic blood pressure and improves early markers of atherosclerosis in pre-pubertal obese children. Journal of the American College of Cardiology 54(25):2396-2406.

Flusberg, Stephen J; Thibodeau, Paul H.; Uri, Rachel; Thompson, Briana. (2017). Narratives for Obesity: Effects of Weight Loss and Attribution on Empathy and Policy Support.Health Education & Behavior, v44 n4 p638-647.

Fredericks CR, Kokot SJ, Krog S.(2006). Using a developmental movement programme to enhance academic skills in grade 1 learners. South African Journal for Research in Sport, Physical Education and Recreation. 28(1):29–42.

Going, S. B., T. G. Lohman, E. C. Cussler, D. P. Williams, J. A. Morrison, and P. S. Horn. (2011). Percent body fat and chronic disease risk factors in US children and youth. American Journal of Preventive Medicine 41(4):S77-S8.

Going, S., M. Hingle, and J. Farr.(2012). Body composition. In Modern nutrition in health and disease, 11th ed., edited by A. C. Ross, B. Caballero, R. J. Cousins, K. L. Tucker, and T. R. Ziegler. Baltimore, MD: Lippincott, Williams & Wilkins. P. 1648.

Gordon-Larsen P, McMurray RG, Popkin BM.(2000). Determinants of adolescent physical activity and inactivity patterns. 105(6):E83.PMID:10835096

Grieco LA, Jowers EM, Bartholomew JB. (2009).Physically active academic lessons and time on task: The moderating effect of body mass index. Medicine and Science in Sports and Exercise.;41(10):1921–1926.

Grissom JB. (2005).Physical fitness and academic achievement. Journal of Exercise Physiology Online.;8(1):11–25.

Groppel, Jack L. (2011). Thinking beyond the Playing Field: Leading Change in Your Community.Journal of Physical Education, Recreation & Dance (JOPERD), v82 n6 p35-40.

Gutin, B., and S. Owens. (2011). The influence of physical activity on cardiometabolic biomarkers in youths: A review. Pediatric Exercise Science 23(2):169.

Gutin, B., P. Barbeau, S. Owens, C. R. Lemmon, M. Bauman, J. Allison, H.-S. Kang, and M. S. Litaker. (2002). Effects of exercise intensity on cardiovascular fitness, total body composition, and visceral adiposity of obese adolescents. American Journal of Clinical Nutrition 75(5):818-826.

Halle, M., U. Korsten-Reck, B. Wolfarth, and A. Berg. (2004). Low-grade systemic inflammation in overweight children: Impact of physical fitness. Exercise Immunology Review 10:66-74.

Helsedirektoratet (2015). Trivsel i skolen [well-being at school]. Oslo: Helsedirektoratet.

Herbert, Patrick C.; Lohrmann, David K.; Hall, Cougar. (2017). Targeting Obesity through Health Promotion Programs for School Staff. Strategies: A Journal for Physical and Sport Educators, v30 n1 p28-34.

HHS.(U.S. Department of Health and Human Services). (2008). Physical activity guidelines for Americans.Washington, DC: HHS.

Hillman CH, Pontifex MB, Raine LB, Castelli DM, Hall EE, Kramer AF. (2009).The effect of acute treadmill walking on cognitive control and academic achievement in preadolescent children.Neuroscience;159(3):1044. http://www.equitycampaign.org/i/a/document/12557_EquityMattersVol6_Web03082010.pdf

Hussey, J., C. Bell, K. Bennett, J. O'Dwyer, and J. Gormley. (2007). Relationship between the intensity of physical activity, inactivity, cardio respiratory fitness and body composition in 7-10-year-old Dublin children. British Journal of Sports Medicine41 (5):311-316.

Imperatore, G., Y. J. Cheng, D. E. Williams, J. Fulton, and E. W. Gregg. (2006). Physical activity, cardiovascular fitness, and insulin sensitivity among US adolescents: The National Health and Nutrition Examination Survey, 1999-2002. Diabetes Care 29 (7):1567-

1572.in young people. Sports Medicine 33 (15):1127-1143.International Journal of Sports Medicine 23(6):439.

IOM. (2012a). Accelerating progress in obesity prevention: Solving the weight of the nation. Washington, DC: The National Academies Press.

IOM. (2012b). Fitness measures and health outcomes in youth. Washington, DC: The National Academies Press.

IOM.(Institute of Medicine).(2005). Preventing childhood obesity: Health in the balance. Washington, DC: The National Academies Press.

Isasi, C. R., R. J. Deckelbaum, R. P. Tracy, T. J. Starc, L. Berglund, and S. Shea. (2003). Physical fitness and C-reactive protein level in children and young adults: The Columbia University Biomarkers Study. Pediatrics111 (2):332-338.

Janssen, I., and A. G. LeBlanc. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. International Journal of Behavioral Nutrition and Physical Activity 7(40):1-16.

Janssen, I., P. Katzmarzyk, W. Boyce, C. Vereecken, C. Mulvihill, C. Roberts, C. Currie, and W. Pickett.(2005). Comparison of overweight and obesity prevalence in schoolaged youth from 34 countries and their relationships with physical activity and dietary patterns. Obesity Reviews 6 (2):123-132.

Jones, M., G. Stratton, T. Reilly, and V. Unnithan. (2007). The efficacy of exercise as an intervention to treat recurrent nonspecific low back pain in adolescents. Pediatric Exercise Science 19 (3):349-359.

Kamijo K, Pontifex MB, O'Leary KC, Scudder MR, Wu CT, Castelli DM, Hillman CH. (2011).The effects of an afterschool physical activity program on working memory in preadolescent children. Developmental Science;14 (5):1046–1058.

Kelley, G. A., and K. S. Kelley. (2008). Effects of aerobic exercise on non-high-density lipoprotein cholesterol in children and adolescents: A meta-analysis of randomized controlled trials. Progress in Cardiovascular Nursing 23(3):128-132.

Kibbe DL, Hackett J, Hurley M, McFarland A, Schubert KG, Schultz A, Harris S. (2011).Ten years of TAKE 10!®: Integrating physical activity with academic concepts in elementary school classrooms. Preventive Medicine; 52 (Suppl):S43–S50.

Kim, Y. K. Y., and S. L. S. Lee. (2009). Physical activity and abdominal obesity in youth. Applied Physiology, Nutrition, and Metabolism 34(4):571-581.

Kuczmarski, R. J., C. L. Ogden, L. M. Grummer-Strawn, K. M. Flegal, S. S. Guo, R. Wei, Z. Mei, L. R. Curtin, A. F. Roche, and C. L. Johnson. (2000). CDC growth charts: United States. Advance Data (314):1.

Laaksonen, D. E., H.-M. Lakka, J. T. Salonen, L. K. Niskanen, R. Rauramaa, and T. A. Lakka. (2002). Low levels of leisure-time physical activity and cardiorespiratory fitness predict development of the metabolic syndrome. Diabetes Care 25(9):1612-1618.

Laurson, K. R., J. C. Eisenmann, and G. J. Welk. (2011). Body fat percentile curves for US children and adolescents. American Journal of Preventive Medicine 41(4):S87-S92.

Lee, S., J. L. Kuk, L. E. Davidson, R. Hudson, K. Kilpatrick, T. E. Graham, and R. Ross. (2005). Exercise without weight loss is an effective strategy for obesity reduction in obese individuals with and without type 2 diabetes. Journal of Applied Physiology 99(3):1220-1225.

Lobelo, F., R. R. Pate, M. Dowda, A. D. Liese, and S. R. Daniels. (2010). Cardiorespiratory fitness and clustered cardiovascular disease risk in US adolescents. Journal of Adolescent Health 47(4):352-359.

Lohman, T. G., K. Ring, K. H. Schmitz, M. S. Treuth, M. Loftin, S. Yang, M. Sothern, and S. Going. (2006). Associations of body size and composition with physical activity in adolescent girls. Medicine and Science in Sports and Exercise 38(6):1175.

London RA, Castrechini S.(2011).A longitudinal examination of the link between youth physical fitness and academic achievement. Journal of School Health;81(7):400–408.

Lubans DR, Morgan PJ, Cliff DP, Barnett LM, Oakley AD. (2010). Fundamental movement skills in children and adolescents: Review of associated health benefits. Sports Medicine. 40(12):1019–1035.

MacKelvie, K. J., M. A. Petit, K. M. Khan, T. J. Beck, and H. A. McKay. (2004). Bone mass and structure are enhanced following a 2-year randomized controlled trial of exercise in prepubertal boys. Bone 34(4):755-764.

Mahar MT, Murphy SK, Rowe DA, Golden J, Shields AT, Raedeke TD. (2006).Effects of a classroom-based program on physical activity and on-task behavior. Medicine and Science in Sports and Exercise; 38(12):2086.

Malina, R. M.(2002). 15—exercise and growth: Physical activity as a factor in growth and maturation. In Human growth and development. San Diego: Academic Press. Pp. 321-348.

Malina, R. M., C. Bouchard, and O. Bar-Or. (2004). Growth, maturation, and physical activity, 2nd ed. Champaign, IL: Human Kinetics Publishers.

Malina RM, Roche AF. (1983). Manual of physical status and performance in childhood, Vol. 2. New York: Plenum.

Marshall, C. And Rossman, G. (2010). Designing Qualitative Research. Sage Publications. ISBN: 141297044X, 9781412970440.

McMurray, R., S. Bangdiwala, J. Harrell, and L. Amorim. (2008). Adolescents with metabolic syndrome have a history of low aerobic fitness and physical activity levels. Dynamic Medicine 7(1):5.

Meyer, A. A., G. Kundt, U. Lenschow, P. Schuff-Werner, and W. Kienast. (2006). Improvement of early vascular changes and cardiovascular risk factors in obese children after a six-month exercise program. Journal of the American College of Cardiology 48(9):1865-1870.

Mihanovic,M.(2015).QualityofLifeofPatients. https://www.Medicalnewstoday.com/articles/150999.php.

NASPE (National Association for Sport and Physical Education). (2004). Moving into the future: National Physical Education Content Standards (2nd ed.). Reston, VA: NASPE.

NASPE. Recess for elementary school students.(2006). [December 1, 2012]. http://www.aahperd.org/naspe/standards/upload/recess-for-elementary-school-students-2006.pdf.

Nassis, G. P., K. Papantakou, K. Skenderi, M. Triandafillopoulou, S. A. Kavouras, M. Yannakoulia, G. P. Chrousos, and L. S. Sidossis. (2005). Aerobic exercise training improves insulin sensitivity without changes in body weight, body fat, adiponectin, and inflammatory markers in overweight and obese girls. Metabolism: Clinical and Experimental 54(11):1472.

Nordqvist, N. (2017). Health: What does good health really mean of obesity. In Physical activity and obesity, edited by C. Bouchard. Champaign, IL. Human Kinetics Publishers.

Ogden, C. L., M. D. Carroll, B. K. Kit, and K. M. Flegal. (2005). Prevalence of obesity and trends in body mass index among U.S. children and adolescents, 1999-2010. Journal of the American Medical Association 307(5):483-490.

Ondrak, K. S., R. G. McMurray, S. I. Bangdiwala, and J. S. Harrell. (2007). Influence of aerobic power and percent body fat on cardiovascular disease risk in youth. Journal of Adolescent Health 41(2):146-152.

Pan, Y., and C. A. Pratt. (2008). Metabolic syndrome and its association with diet and physical activity in US adolescents. Journal of the American Dietetic Association 108(2):276.

Pate, R. R., C.-Y. Wang, M. Dowda, S. W. Farrell, and J. R. O'Neill. (2006). Cardio-respiratory fitness levels among US youth 12 to 19 years of age: Findings from the 1999-2002 National Health and Nutrition Examination Survey. Archives of Pediatrics & Adolescent Medicine 160(10):1005.

Pellegrini AD, Bohn CM. (2005).The role of recess in children's cognitive performance and school adjustment. Educational Researcher; 34(1):13–19.

Pesce C, Crova C, Cereatti L, Casella R, Bellucci M. (2009).Physical activity and mental performance in preadolescents: Effects of acute exercise on free-recall memory. Mental Health and Physical Activity;2(1):16–22.

Perusse, Rachelle; Kailimang, Lukas; Krell, Megan. (2009). Closing the Obesity Achievement Gap: Evidence-Based Practices that School Counselors Can Help Implement.Journal of School Counseling, v7 n23.

Platat, C., A. Wagner, T. Klumpp, B. Schweitzer, and C. Simon. (2006). Relationships of physical activity with metabolic syndrome features and low-grade inflammation in adolescents. Diabetologia 49(9):2078-2085.

Pontifex MB, Scudder MR, Drollette ES, Hillman CH. (2012).Fit and vigilant: The relationship between sedentary behavior and failures in sustained attention during preadolescence. Neuropsychology;26(4):407–413.

Reed JA, Einstein G, Hahn E, Hooker SP, Gross VP, Kravitz J. (2010).Examining the impact of integrating physical activity on fluid intelligence and academic performance in an elementary school setting: A preliminary investigation. Journal of Physical Activity and Health.;7(3):343–351.

Richardson, Laura A.; Fister, Carrie L.; Ramlo, Susan E. (2015). Effect of an Exercise and Weight Control Curriculum: Views of Obesity among Exercise Science Students. Advances in Physiology Education, v39 n2 p43-48.

Ritchie, J., Lewis, J., Nicholls, C., and Ormston, R.(2013).Qualitative research practice: A guide for social science students and researchers. Sage Publications. ISBN: 1446296202,9781446296202.

Robert, Sarah A., Ed.; Weaver-Hightower, Marcus B., Ed. (2011). School Food Politics: The Complex Ecology of Hunger and Feeding in Schools around the

World. Global Studies in Education, Volume 6. ISBN-978-1-4331-1308-6.

Ross, R., and A. J. Bradshaw.(2009). The future of obesity reduction: Beyond weight loss. Nature Reviews Endocrinology 5(6):319-325.

Rowland, T. W. (2005). Children's exercise physiology. Champaign, IL: Human Kinetics Publishers.

Rowlands, A., D. Ingledew, and R. Eston. (2000). The effect of type of physical activity measure on the relationship between body fatness and habitual physical activity in children: A meta-analysis. Annals of Human Biology 27(5):479-497.

Rubin, D. A., R. G. McMurray, J. S. Harrell, A. C. Hackney, D. E. Thorpe, and A. M. Haqq. (2008). The association between insulin resistance and cytokines in adolescents: The role of weight status and exercise. Metabolism: Clinical and Experimental 57(5):683.

Ruiz, J. R., F. B. Ortega, J. Wärnberg, L. A. Moreno, J. J. Carrero, M. Gonzalez-Gross, A. Marcos, A. Gutierrez, and M. Sjöström. (2008). Inflammatory proteins and muscle strength in adolescents: The Avena Study. Archives of Pediatrics & Adolescent Medicine 162(5):462-468.

Ruiz, J., F. Ortega, J. Wärnberg, and M. Sjöström. (2007). Associations of low-grade inflammation with physical activity, fitness and fatness in prepubertal children: The European Youth Heart Study. International Journal of Obesity 31(10):1545-1551.

Salaria, N. (2012).Meaning of the Term- Descriptive Survey Research Method. Vol. No.1, Issue No.6. ISSN:2231-6868. http://www.ijtbm.com.

Sartorius, N. (2005). Constitution of theWHO. In World Health Organization Basic documents 45th ed.Geneva.WHO.

Shaibi, G. Q., M. L. Cruz, G. D. C. Ball, M. J. Weigensberg, G. J. Salem, N. C. Crespo, and M. I. Goran. (2006). Effects of resistance training on insulin sensitivity in overweight Latino adolescent males. Medicine and Science in Sports and Exercise 38(7):1208.

Sibley BA, Etnier JL. (2003).The relationship between physical activity and cognition in children: A meta-analysis. Pediatric Exercise Science.;15:243–256.

Sigal RJ, Kenny GP, Boulé NG, Wells GA, Prud'homme D, Fortier M, Reid RD, Tulloch H, Coyle D, Phillips P. (2007).Effects of aerobic training, resistance training, or both on glycemic control in type 2 diabetes. Annals of Internal Medicine. 147(6):357–369.

Singh A, Uijtdewilligen L, Twisk JWR, van Mechelen W, Chinapaw MJM. (2012).Physical activity and performance at school: A systematic review of the literature including a methodological quality assessment. Archives of Pediatrics and Adolescent Medicine.;166(1):49–55.

Steene-Johannessen, J., S. A. Anderssen, E. Kolle, and L. B. Andersen. (2009). Low muscle fitness is associated with metabolic risk in youth. Medicine and Science in Sports and Exercise 41(7):1361-1367.

Stewart JA, Dennison DA, Kohl HW III, Doyle JA. (2004).Exercise level and energy expenditure in the TAKE 10!® in-class physical activity program. Journal of School Health.;74(10):397–400.

Stoedefalke, K., N. Armstrong, B. Kirby, and J. Welsman. (2000). Effect of training on peak oxygen uptake and blood lipids in 13- to 14-year-old girls. Acta Paediatrica 89(11):1290-1294.

Strong WB, Malina RM, Blimkie CJ, Daniels SR, Dishman RK, Gutin B, Hergenroeder AC, Must A, Nixon PA, Pivarnik JM, Rowland T, Trost S, Trudeau F. (2005).Evidence based physical activity for school-age youth. Journal of Pediatrics.;146(6):732–737.

Taliaferro LA, Rienzo BA, Donovan KA. (2010).Relationships between youth sport participation and selected health risk behaviors from 1999 to 2007. Journal of School Health.;80(8):399–410.

Telama R, Yang X, Laakso L, Viikari J. (1997).Physical activity in childhood and adolescence as predictor of physical activity in young adulthood. American Journal of Preventive Medicine.;13(4):317–323.

Thomas, N., and D. Williams.(2008). Inflammatory factors, physical activity, and physical fitness in young people. Scandinavian Journal of Medicine & Science in Sports 18(5):543-556.

Tomporowski PD, Davis CL, Lambourne K, Gregoskis M, Tkacz J. (2008b).Task switching in overweight children: Effects of acute exercise and age. Journal of Sport and Exercise Psychology.;30(5):497–511.

Tomporowski PD. (2003).Effects of acute bouts of exercise on cognition. Acta Psychologica.;112(3):297–324.

Tripp, Paula J.; Choi, Jin Young. (2015). Perceptions of Childhood Obesity among Rural Parents, Teachers, and School Administrators. Journal of Family and Consumer Sciences, v106 n4 p33-39.

Trudeau F, Laurencelle L, Shephard RJ. (2004).Tracking of physical activity from childhood to adulthood. Medicine and Science in Sports and Exercise.;36(11):1937.

Trudeau F, Laurencelle L, Tremblay J, Rajic M, Shephard R. (1999).Daily primary school physical education: Effects on physical activity during adult life. Medicine and Science in Sports and Exercise.;31(1):111.

Trudeau F, Shephard RJ, Arsenault F, Laurencelle L. (2001).Changes in adiposity and body mass index from late childhood to adult life in the Trois-Rivières study. American Journal of Human Biology;13(3):349–355.

Trudeau F, Shephard RJ.(2008).Physical education, school physical activity, school sports and academic performance. International Journal of Behavioral Nutrition and Physical Activity.5.

Trudeau F, Shephard RJ.(2010).Relationships of physical activity to brain health and the academic performance of school children. American Journal of Lifestyle Medicine;4:138–150.

Van Dusen DP, Kelder SH, Kohl HW III, Ranjit N, Perry CL.(2011).Associations of physical fitness and academic performance among schoolchildren. Journal of School Health;81(12):733–740.

Wärnberg, J., and A. Marcos. (2008). Low-grade inflammation and the metabolic syndrome in children and adolescents. Current Opinion in Lipidology 19(1):11-15.

Wärnberg, J., E. Nova, J. Romeo, L. A. Moreno, M. Sjöström, and A. Marcos.(2007). Lifestyle-related determinants of inflammation in adolescence. British Journal of Nutrition98 (Suppl 1):S116-S120.

Wärnberg, J., K. Cunningham, J. Romeo, and A. Marcos.(2010). Session 6: Role of physical activity on immune function physical activity, exercise and low-grade systemic inflammation. Proceedings of the Nutrition Society 69(3):400-406.

Watts, K., T. W. Jones, E. A. Davis, and D. Green. (2005). Exercise training in obese children and adolescents: Current concepts. Sports Medicine 35(5):375-392.

Wechsler H, Brener ND, Kuester S, Miller C.(2001).Food service and food and beverage available at school: Results from the School Health Policies and Programs Study. Journal of School Health.;71(7):313–324.

Weiss, R., and S. Caprio.(2005). The metabolic consequences of childhood obesity. Best Practice and Research Clinical Endocrinology and Metabolism 19(3):405-419.

Welk GJ, Jackson AW, Morrow J, James R, Haskell WH, Meredith MD, Cooper KH. (2010).The association of health-related fitness with indicators of academic performance in Texas schools. Research Quarterly for Exercise and Sport.;81(Suppl 2):16S–23S.

Welk, G. J., S. B. Going, J. R. Morrow, and M. D. Meredith.(2011). Development of new criterion-referenced fitness standards in the Fitnessgram® program. American Journal of Preventive Medicine 41(2):6.

White, J. (2013). Education in well-being. In S. David, I. Boniwell, & A. C. Ayers (Eds.), The Oxford handbook of happiness Oxford: Oxford University Press pp. 540-550.

Wilson, R. F., Wang , Y., Cai , L., Wu , Y., Weston , C. Fawole , O. (2015). What childhood obesity prevention programmes work? A systematic review and meta-analysis. Pages 547-565. https://doi.org/10.1111/obr.12277.

Wittberg R, Cottrell LA, Davis CL, Northrup KL.(2010).Aerobic fitness thresholds associated with fifth grade academic achievement. American Journal of Health Education;41(5):284–291.

Zeng, Q., S.-Y. Dong, X.-N. Sun, J. Xie, and Y. Cui. (2012). Percent body fat is a better predictor of cardiovascular risk factors than body mass index. Brazilian Journal of Medical and Biological Research 45(7):591-600.

Zhu W, Welk GJ, Meredith MD, Boiarskaia EA. (2010). A survey of physical education programs and policies in Texas schools. Research Quarterly for Exercise and Sport.; 81(Suppl 2):42S–52S