

Assessing The Physical Fitness Level of Students in Senior High Schools

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Abstract

The adolescent school going individuals face challenges as they go through the phases of development and academic work. Literature on physical fitness levels among such students in the second cycle institutions in Ghana is scarce, hence this study. The study assessed the physical fitness levels of 15-17-year-old students of St. Peters SHS in the Eastern Region of Ghana. Descriptive design with quantitative approach was adopted for the study. 60 participants were sampled for the study using purposive and simple random sampling techniques. The fitnessgram (made up of battery of tests) with attached checklists was used for data collection. The findings revealed that only one-third (33.3%) of the participants in St. Peters SHS had a cardiovascular endurance rating in the Healthy Fitness Zone (HFZ), with majority of them (66.7) in the "Needs Improvement" zone. Results further showed that majority of the participants had both muscular endurance and body mass composition ratings of (71.7% and 78.4%) with respect to Healthy Fitness Zone (HFZ) while only (28.3% and (21.6%) needed improvement. Results again affirm that, enjoyment and fun during physical education lessons (65%), attention given to injured students in a physical education class (93.3%), planned physical education classes (78.3%) and awareness of the importance of participation in physical education and sporting activities (71,6%) were relevant factors. Finally, results indicated that majority of the participants were in support of improving teaching and learning materials (TLMs) and facilities (86.7%) as well as making physical education a compulsory subject (71.7%). It was concluded that attention must be given to the cardiovascular health needs of the students in St. Peters SHS. Fun activities, injury prevention and treatment, appropriate planning of class sessions and provision of resources would promote and improve healthy active lifestyles amongst the student populace.

Keywords: Healthy Fitness Zone, Active lifestyle, Health Risk, and Adolescent Students.

Introduction

Physical fitness is an essential health factor in children and adolescents, and therefore its tracking and assessment requires topmost priority in all educational institutions (Kolimechkov, 2017). Currently, several physical fitness assessment approaches including the Progressive Aerobic Cardiovascular Endurance Run (PACER) are being utilized to ascertain the fitness levels of students. The President's Council for Physical Fitness and Sport, has encouragement and motivation of individuals as an important requirement towards adoption and retention to physical activity behaviours across their lifespan (Simonton, Mercier, & Garn, 2019). This study focused on assessing the physical fitness level of 15–17-year students of St Peters SHS in the Eastern Region, Ghana.

Regular participation in physical activities and exercises are perhaps the best investment in health, which very often pays off well (Chen, Hammond-Bennett, Hynar, & Mason, 2018) and supported by President Carter (former President of America) that “everything done to make Americans more physically fit cuts medical bills, helps the people to live longer and adds to the quantity of each day of life lived. For malformation of body posture, obesity, fatigue, among others to be controlled, physical activity and exercise is very important” (Chen *et.al.* 2018)

Physical activity is a major modifiable risk factor to several non-communicable diseases with a certain amount required in order to stay healthy and strong. It is recommended that all school-aged children and adolescents engage in at least 60 minutes of moderate-to-vigorous physical activity each day. (US Department of Health and Human Services, 2008). Nonetheless, most adolescents are not engaged in the recommended amount of PA (Chen, Hammond-Bennett, Hynar, & Mason, 2018). It has emerged from research reports that low quality of physical education in schools has led to the declining levels of students' physical fitness and no inclination to its increase among students (Griban, Yahupov, Svystun, Dovgan, Yeromenko, Udych, & Bloshchynskyi, 2020).

Observations from practical education classes and anecdotal records revealed that, students between 15-17 years could neither complete simple physical activity tasks, such as performing muscular strength and endurance activities well nor finish simple aerobic and anaerobic endurance activities for the minimum recommended duration culminating into students' break downs, serious injuries, hospitalizations in some cases, abandonment of PE classes, or failing to attend the next subject class after a PE lesson with some parents passionately warning their wards to completely stay off PE classes (Maffulli & Caine 2005).

Despite proven benefits of regular participation in physical activities, majority of these students could not to participate freely and willingly because of strict and rigorous school rules and regulations mostly enforced by heads and other subject teachers to focus and concentrate mainly on the examinable subjects all the time leading to low levels of physical fitness and health outcomes as reported by the Ghana Physical Activity Report Card (Ocansey, Aryeetey, Sofu, Nazzar, Badasu, Pambo, Nyawornota, Nartey, & Sarkwa, 2016).

Even though, some studies had been done by Ocansey *et. al.*, (2016), on Adolescents' Participation in PE in Ghana, it did not specifically cover SHS students in Ghana hence, the need for this study to assess the

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physical fitness level of 15–17-year students in St Peters SHS, Kwahu Nkwatia Eastern Region, Ghana as a baseline for further investigation.

Findings of the study would help establish students' physical fitness level and prescribe appropriate fun-based physical activity programmes to promote fitness and healthy lifestyle in the school and similar environments in the Kwahu East Municipality which would go a long way to reduce student's break downs, serious injuries, hospitalizations and absenteeism from physical education classes especially in era of COVID-19 pandemic and in addition add to the body of knowledge regarding physical fitness and exercise whilst, providing new directions for further studies.

The study answered the following questions:

1. What are the fitness levels of 15-17 years students of St. Peters SHS?
2. What are the factors responsible for the fitness levels of 15-17 years students St. Peters SHS?
3. What suggestions can be offered to improve the fitness level of 15-17 years students of St. Peters SHS?

Literature Review

Concept of Physical Fitness

Physical activity is a major modifiable risk factor to several non-communicable diseases. The human body requires a certain amount of physical activity in order to stay healthy and strong. It is recommended that all school-aged children and adolescents should engage in at least 60 minutes of moderate-to-vigorous physical activity each day by the 2008 American Physical Activity Guidelines (US Department of Health and Human Services, 2008). Nonetheless, most adolescents are not engaged in the recommended amount of PA (Chen *et. al.*, 2018). Societal organizations and institutions especially schools have been tasked with the education and instilling of physical fitness into students. It was reported that low quality of physical education in schools has been the cause of declining levels of students' physical fitness and no inclination to its increase among students (Griban *et. al.*, 2020). Physical fitness refers to the ability of the body systems to work together efficiently leading to the performance of daily tasks and healthy living. Physical fitness is a set of attributes that people have or achieve related to the ability to perform physical activity (Newman, 2017). The impact of physical fitness on the health of the human body is vital to the overall health of children and adults (Chen *et al.*, 2018). Health-related physical fitness comprises a set of components which forms the bases for assessing fitness and overall health of an individual and associated with improvements cardiovascular fitness, which is frequently equated with improvements in health status or disease prevention along with muscular strength and endurance, flexibility and body (Bouca-Machado, Rosario, Caldiera, Castro-Caldas, Guerreiro, Venturelli & Ferreira 2020).

Impact of Physical Fitness on Health

According to the World Health Organization (2010), children and youth aged 5 – 17, should accumulate a minimum of sixty (60) minutes of moderate-to-vigorous intensity physical activity daily. These recommendations help young people to develop healthy musculoskeletal tissues, cardiovascular system,

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and neuromuscular awareness and maintain a healthy body weight. Significant correlation exists among physical fitness, academic performance and positive health outcomes in adolescents (Santana, Azevedo, Cattuzzo, Hill, Andrade, & Prado, 2017). Physical activity decreases risk of developing cardiovascular disease (CVD), stroke, some cancers, obesity, type 2 DM and is additionally effective within the treatment of several of these diseases (Keeley, Jade & Fox, 2009). Recent studies related to the effects of regular physical activity performance. High school students who engage in regular physical activity with the correct mixes have decreased the risks for CVDs, high tension, obesity and type-2 diabetes; manage stress effectively and reduce the effects of emotional disorders (Lok, Lok & Tasgin, 2016).

Factors influencing Children and Youth Participation in Physical Activity

Physical activity and exercise sessions filled with fun and positive reinforcement is crucial for children and reduces the negative consequences later in adult activity (Jago, Brockman, Fox, Cartwright, Page & Thompson, 2009). Efforts should be directed toward improving fundamental physical activity skills such as running, jumping, twisting, kicking, and balancing in non-competitive and non-threatening setting. The social cognitive theory espouses that, children are motivated to exercise if they believe that the targeted behaviour will be beneficial (outcome expectancy) and attainable (self-efficacy). The weight category of children (normal, overweight and obese) respectively influences participation in physical activity due the significant physiological and emotional differences (Gruber & Haldeman, 2009) and has been attributed, in part; to the idea of “learned helplessness”. Obtaining an accurate assessment are often extremely challenging due to short attention span, low pain threshold, and lack of motivation. Low levels of health-related physical fitness resulting from hypokinectivity have stalled participation in physical activity among children (Salvy, de la Haye, Bowker & Hermans, 2012).

Methodology

The study employed the descriptive survey design using quantitative approach. The population of the study comprised 200 male students aged 15-17 years of St Peters SHS at Kwahu Nkwatia in the Eastern Region of Ghana with obese BMI categorization. A sample of 60 participants representing 30% of the study population were selected using the simple random sampling technique.

A fitnessGram comprising (PACER for cardiovascular endurance, 1RM for muscular strength, push-ups for muscular endurance, sit and reach for flexibility and BMI for body composition) was adopted for the study to determine whether a student is in the healthy zone or needs improvement. Validation of the fitnessgram was established using criterion means (California Department of Education, 2019). The reliability of the fitnessGram had a correlation coefficient of 0.81 for test- retest (Legar & Lambert, 1982). Data collection was done with two trained research assistants in the school after the acceptance of the introductory letter for the exercise. The purpose of the study was explained to the participants after seeking their consent and their confidentiality and anonymity were assured. The return rate of the data collected for the study was 100%. Data collected was analysed using descriptive statistics of frequency counts,

percentages, means and standard deviations. The Statistical Package for Social Sciences (SPSS version 26) was used for this purpose.

Results and Discussions

Results on Demographic Information

Table 1: Demographic Information on Participants Age

Age Group	Frequency (n=60)	Percentage (%)
15 years old	26	43.3
16 years old	23	38.3
17 years old	11	18.4
Total	60	100

Source: Field Survey (2021)

Table 2: Demographic Information on Participants Status

Status	Frequency (n=60)	Percentage (%)
Boarding	41	68.3
Day	19	31.7
Total	60	100

Source: Field Survey (2021)

Table 3: Demographic Information on Religious Affiliation of Participants

Religion	Frequency (n=60)	Percentage (%)
Christian	44	73.3
Muslim	16	26.7
Traditionalist	0	0
Total	60	100

Source: Field Survey (2021)

Table 4: PACER (Progressive Aerobic Cardiovascular Endurance Run)

Age	NI-HR	(%)	NI	(%)	HFZ	(%)
15	4	6.7	7	11.7	15	25
16	1	1.7	17	28.3	5	8.3
17	3	5	8	13.3	0	0
Total	8	13.4	32	53.3	20	33.3

Source: Field Survey (2021)

Table 5: Push- Up Test (Muscular Endurance)

Age	NI-HR	(%)	HFZ	(%)
15	8	13.3	18	30
16	5	8.3	18	30
17	4	6.7	7	11.7
Total	17	28.3	43	71.7

Source: Field Survey (2021)

Table 6: Body Mass Index (BMI) of the Participants

Age	NI-HR	(%)	NI	(%)	HFZ	(%)
15	1	1.7	3	5	22	36.7
16	2	3.3	2	3.3	19	31.7
17	0	0	5	8.3	6	10
Total	3	5	10	16.6	47	78.4

Source: Field Survey (2021)

Table 7: Group Data Showing Physical Fitness Levels of Participants

Variable	Pacer	(%)	Curl-Ups	(%)	BMI	(%)
HFZ	20	33.3	43	71.7	47	78.4
NI	40	66.7	17	28.3	13	21.6
Total	60	100	60	100	60	100

Source: Field Survey (2021)

Table 8: Factors Responsible for the Fitness Levels of Participants

Items	SA		A		U		D		SD		Total
	f	%	f	%	f	%	f	%	f	%	
I enjoyed the physical education (PE) classes I took at school during the past 12 months.	2	38.	1	26.	-	-	9	15	1	20	60
Parents and friends often advise students not to participate in any physical activities since it is waste of time.	3	3	6	7	-	-	1	28.	2	43	60
Physical activities given through physical education classes are tedious and dangerous	1	20	5	8.3	-	-	7	3	6	.3	60
	2										
	9	15	4	6.7	-	-	2	38.	2	40	60
							3	3	4		

Much attention is not given to students who engage in physical activities and get injured	3	55	2	38.	-	-	4	6.7	-	-	60
Physical activities are only important when it is time for sports and games.	5		3	3							
	-	-	2	35	-	-	1	18.	2	46	60
			1				1	3	8	.7	

Source: Field Survey (2021)

Table 9: Data Showing Percentage Analysis of Suggestions from Participants

Suggestions	No:	Yes (%)	No:	No (%)	Total No:	(%)
Physical education should be made mandatory for all students.	43	71.1	17	28.3	60	100
Physical education teaching and learning materials must be improved.	52	86.7	8	13.3	60	100

Source: Field Survey (2021)

Findings of research question one revealed that participants were not fit with respect to cardiovascular endurance. The reason could be that these participants participated less in recommended physical activity levels required for improving cardiovascular fitness. This confirms the revelation of Gutin, Yin and Humphries (2005) that frequent participation in recommended level of physical activity among adolescents aged 12-19 years resulted in higher fitness levels, improved cardiovascular endurance and reduced the risks associated with cardiovascular disease. Research question one further revealed that participants demonstrated a reasonable level of fitness in muscular endurance as well as healthy body mass. The reason behind the good levels of muscular endurance displayed by participants was as a result of the engagements in activities with more content in muscular strength and endurance while healthy body mass composition of these adolescent students was linked to the complimentary role played by the good healthy nutrition policies and practices adopted by the schools’ management. This results is in agreement with the findings of the Ministry of Education and Human Resources Seoul, Korea (2005) that substantial improvement in muscular strength, power and muscular endurance could be achieved through planned moderate physical activities. This finding once again supports Lee, (2015) who argued that adolescents who participated in physical activities at the submaximal level and practiced good nutrition grew taller and had lower body mass index (BMI) than those who did not.

Findings of research question two showed that, enjoyment derived during practical physical education classes, attention given to injured students in physical education classed, appropriately planned physical education sessions and awareness of the importance of physical education to both students and parents or guardians were very significant factors influencing participation in the practical physical education sessions confirming the research report by Butt, Weinberg, Breckon and Claytor (2011) that enjoyment and variety in the adolescents physical activity sessions would directly influence their regular participation in fitness enhancing physical activity. This results further concords with what Merkel and Molony (2012) that injury

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prevention and the provision of proper care and treatment were among the factors that reduced adolescents risk and encouraged their participation in moderate to vigorous or fitness related physical activity and also supports Lubans, Morgan, Cliff, Barnett and Oakley (2010) that, physical activity programmes should be based on developmentally appropriate motor activities and be taught with the right teaching and learning materials, in a safe environment in order to foster self-efficacy, enjoyment, and ongoing participation while finally the position held by the National Association for Sport and Physical Education in Reston, USA (2004) that, it is only when both parents and their wards truly understand the place of Physical Education in the school's curriculum that it would contribute to the child's total development as well as academic excellence. However, Salmon, Brown and Hume (2009) were of the opposing view that there is no positive relationship between enjoyment and participation in moderate to vigorous or fitness enhancing physical activity.

Findings of research question three showed that teaching and learning materials as well as facilities for physical education needs to be improved and physical education classes ought to be made compulsory. Though, there were teaching and learning materials (TLMS) as well as facilities for teaching physical education in the school, their current state needed maintenance to encourage students' participation while making the subject compulsory. This finding supports National Curriculum of Physical Education (2016) report which states facilities, teaching and learning materials (TLMS) for teaching physical education must meet acceptable safety standards and conforms the purported view by Fairclough and Stratton (2005) that, when the place of physical education in the school's curriculum is understood by all stakeholders, it would be considered a priority and lead to its conscious participation.

Conclusion

Based on the findings, it was concluded that much attention needs to be given to the cardiovascular needs of the students in St Peters SHS needs improvement. Teaching and learning materials, equipment and facilities are not in good shape and require maintenance. The school's physical education programme has more content in activities that develop muscular strength and endurance. Physical education lessons lack the enjoyment derived from stress-free and fun-filled participation.

Recommendations

Based on the findings and conclusions, the following recommendations were made;

1. Physical education teachers in St Peters SHS in the Eastern Region need to re-structure their physical education lessons to include content activities that would improve the cardiovascular endurance levels of their students.
2. Physical activity class sections should be developmentally appropriate and organized in ways that would be stress-free, full of fun, provide safety and enjoyable.
3. Physical education teachers should have training to enable handle injury related issues in PE classes, as a school policy in order to boost students' confidence and ensure their safety.

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4. The school's management should make efforts to provide modern facilities and teaching and learning materials (TLMs) while maintaining the existing ones to enhance the teaching of physical education in the school.

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