



PHYSICAL EDUCATION CURRICULUM AND THE LEVEL OF PHYSICAL ACTIVITY OF BASIC SCHOOL CHILDREN IN GHANA

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Abstract:

Purpose: This study sought to investigate the relationship between current physical education curriculum of basic schools and the level of physical activity of children in the Ga East Municipality of Ghana. **Method:** A total of 201 children from selected schools (4 with physical education curriculum [PE] and 4 without physical education curriculum [NPE]) were included in the study. A semi-structured questionnaire was used to collect information on socio-demographic characteristics and physical activity. Pearson's Chi square test was used to evaluate the relationship between physical education curriculum and physical activity levels of school children. **Results:** Few of the children met the WHO recommendation for physical activity for the target age-group. The two groups did not differ with respect to the duration of physical activity of the children. Children attending public schools were four times more likely to engage in physical activities for at least 180 minutes per week compared to those in private schools. **Conclusion:** Current physical education curriculum was not related to the level of physical activity and nutritional status of basic school children in this study. PE lessons need to be restructured so as to meet the physical activity needs of children in basic schools.

Keywords: school children, physical education, physical activity, nutritional status, Ghana

1. Introduction

Physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure (WHO, 2013). Physical activity produces overall physical, psychological, and social benefits for both children and adults. Physical Education is a

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course that is taught in schools to enable children to get a period to engage in physical activity. Obesity rate is increasing among adolescents globally and physical education is one strategy that can help reduce it (Viuda-Serrano *et al.*, 2011). A review of the literature has also shown that interventions that are school based have the ability to improve physical activity levels of children in low- and middle income countries (Verstraeten *et al.*, 2012). Consequently, some of the reasons for which Ghana's Ministry of Education offers Physical Education in schools are: to improve the general health of the individual and general community, leading to lower absenteeism from school and work; create the love for sports and games; and impart a healthy and positive attitude of mind that helps academic work in school (Ministry of Education, 2010). Despite these expected benefits, physical education has slipped in priority for some years in Ghana (Doe, 2006). Thus, although children are being trained in academic disciplines, there is less emphasis on lifestyle changes that will impact on their health. In a study conducted by Steiner *et al.* (2012) in the Ga East Municipality in the Greater Accra Region of Ghana, overweight and obese school children had inadequate dietary and physical activity behaviours. There is scanty information on whether the introduction of physical education curriculum is leading to improved level of physical activity of the school-going child in Ghana.

The main aim of the study was therefore to evaluate the relationship if any, between the currently existing Ghana Education Service physical education curriculum in basic schools and the physical activity level and nutritional status of school children aged 9-15 years in the Ga-East Municipality of Ghana. Additionally, we sought to identify some challenges that are related to the teaching of physical education in basic schools.

2. Methods

The cross-sectional study involved school children (aged 9-15 years) of basic schools in the Ga-East Municipality in the Greater Accra Region of Ghana. A sample size 196 was calculated using the formula given by Moore and McCabe (1993). This was rounded to 200 to account for uncompleted data. The list of basic schools located in the Ga-East Municipality was obtained from Ghana Ministry of Education and the schools were grouped into two; private and public schools. Each group was further classified based on the presence or otherwise of physical education as a curriculum. This provided four lists and two schools were randomly selected from each list. Thus there were four schools with the physical education curriculum (PE) consisting of two private and two public schools, and four schools that did not have physical education curriculum (NPE), also consisting of two private and two public schools.

A semi-structured questionnaire was used to interview the study children. The questionnaire included questions on socio-demographic information (child's age, sex, class); household information (education level of mother, occupation, household possession); physical activity information (physical activity types, frequency, duration,

and knowledge on physical education); and anthropometry (weight and height). Weight was measured in kilograms with an analogue weighing scale (AOV International Company) and height was measured in metres with a stadiometer (Charder Electronic Company Limited).

Data were coded and entered into the Statistical Package for Social Sciences (SPSS) v.16 software for cleaning and analysis. The weight (kg) and height (m) of the children were used to calculate the BMI ($BMI = \text{weight}/\text{height}^2$). Using their BMI values, participants were classified into underweight, normal, and overweight/obese using the WHO cut-offs for BMI-for-age: Overweight: $> +1SD$, Obesity : $> +2SD$, and underweight $< -2SD$ (WHO, 2014). Independent t-tests (for continuous variables) and the Pearson's Chi-square test (for proportions) were used to compare types, frequencies, and duration of physical activities between the groups (PE and non-PE).

3. Results

A total of 201 school children within the ages of 9-15 years participated in the study. Of this, 103 were attending schools that had Physical Education as part of their curriculum (PE), and 98 were from schools that did not have Physical Education as part of their curriculum (NPE). The mean age of the participants was 12.4 ± 1.8 years with no significant difference between PE and NPE schools (Table 1). There were also no differences between the groups (PE and NPE) in the socio-demographic characteristics of the participants, although a substantial proportion (35%) of the children could not provide the educational levels of their mothers.

The two most common physical activities that the study school children engaged in were running (65.7%) and football (65.2%). There were no significant differences between the PE and Non-PE schools with respect to the types of the activities that they engaged in (Figure 1), with the exception of jumping, which a higher proportion of children attending schools with physical education curriculum engaged in compared to those attending schools without physical education curriculum (48.5% v. 32.7%, $p = 0.022$). The two activities least participated by the school children were tennis (9.5%) and net/handball (8%). No significant difference was observed between the groups when the frequencies of engaging in most of the physical activities were compared (Figure 2). However, a lower proportion of children attending schools that had physical education curriculum engaged in throwing at least three times a week compared to children that attended schools without physical education curriculum (4.8% v. 36.4%, $p = 0.011$). All the school children who engaged in tennis did so less than three times per week. Although most of the study children participated in some physical activity on weekly basis, they generally did not spend appreciable time engaging in these activities. Less than a fifth of the participants were engaged in activities for at least 60 minutes for three days per week, and only three children met the WHO recommendation of engaging in physical activities at least 60 minutes daily. Children attending public schools were however, four times (adjusted odds ratio = 4.83, 95% CI: 1.35, 17.30) more

likely to engage in physical activities for at least 180 minutes per week compared to those who were in private schools, Table 3). There were no differences between children attending PE schools and those in non-PE schools in their anthropometric indices (Figure 3). Almost half of the study participants (45.3%) were classified as underweight, based on their BMI, and 5% of the children were overweight or obese.

Less than half of the children defined physical activity as 'any activity that builds the body', and majority observed that physical education as 'time to play or have fun'. However, almost a third of the study children did not know the definition of physical activity nor its benefits. About half of the children indicated that physical activities keep one healthy. Developing one's talent or career was also identified by the children as a main benefit of activities that are engaged in during physical education or during break time. Getting tired or hurt and lack of facilities were the two main challenges of physical education that were identified by the children.

A total of eight (8) heads of the participating schools were interviewed and more than half of them were males (62.5%). The mean age of the school heads was 50.6 ± 10.1 years and there was no difference between the two groups. Most head teachers recognised 'exercising the body' as the definition of physical activity, while physical education was defined as an 'education related to healthy living'. The guidelines for the teaching of PE were mostly from the PE syllabus from the Ghana Education Service (2007). The heads of the schools that do not offer PE indicated lack of trained PE teachers as the reason for not offering the curriculum. Some of the identified challenges encountered in the teaching of PE in the basic schools were inadequate sports facilities (such as football, handballs, and jerseys), playing grounds, and changing rooms. Participants also indicated that the time allocated for PE was not enough. The head teachers also complained that some teachers do not want to teach PE because they are not motivated in any way and that there are no changing rooms for them to change into after the PE lessons. They recommended that for PE to be improved in schools, children should be encouraged to participate. In addition, they identified factors as possible stimulants for improving physical education in basic schools: provision of facilities, revision of the syllabus, and frequent organization of refresher workshops for teachers by the Ghana Education Service.

4. Discussion

The activity level of the children was indirectly measured using activities that they engaged in at school. According to the Ministry of Health of Ghana, (2010), one hour or more of moderate or vigorous aerobic physical activity a day, including vigorous intensity physical activity at least three days a week is recommended for a healthy life for children. In this study, majority of the children had less than the recommended physical activity for a week in terms of frequency for both the PE and non-PE schools. This finding is similar to findings from the analysis of data from 34 countries that participated in the Global School-based Student Health Survey between 2003 and 2007

(Guthold *et al.*, 2010). Because of the many benefits for health of physical activity, recent analysis has suggested that reaching the recommended minimum level of physical activity leads to a reduction in all-cause mortality of 19 per cent – and this rises to 24 per cent if an hour a day is spent in physical activity (Cooper and Hancock, 2011), compared with no activity. A study conducted in the same locality as this study by Steiner *et al.*, (2012) observed that majority of the school children interviewed (81.5%) said they engaged in some form of physical activity on daily basis. However, only a little over a third of them engaged in physical activity for at least one hour in a day. This implies that even the schools which have the physical education curriculum are not doing so for the required period of time. This is contrary to the recommendations of the Ghana Health Service that compulsory physical education should be added in the school curriculum for at least 120 minutes a week (Ghana Ministry of Health, 2010). One main reason given by the study children was that, PE was not done as often as had been allocated on the time table because the period was sometimes used to teach other subjects. Other given reasons included tiredness and lack of interest. For the non-PE schools, they did not meet the recommendation due to the fact that they did not offer PE in their schools and their break time was not enough for them to have adequate physical activity.

According to WHO (2010), spending more than 60 minutes on physical activity yields additional health benefits such as developing their musculoskeletal tissues, healthy cardiovascular system, and neuromuscular awareness. Physical activity that lasts for less than 60 minutes is moderately intense activity, activities that last 90 minutes is endurance performance and those that last more than 60 minutes is intense exercise (Coyle 2004). Based on this classification, most of the study children engaged in moderately intense physical activity. Moderate activities such as walking and dancing, and vigorous activities such as football and running are beneficial for the health of the children. From the study, the children engaged in vigorous activities such as football, but for short periods of time. This implies that the children may not obtain the full benefits of engaging in such activities. According to a study by Trinh *et al.*, (2013), a sustained increase in physical activity, especially the moderate vigorous component, can reduce BMI and therefore help overweight or obese children to attain healthy body weight.

There was no difference between the BMI of the children for both the PE and Non-PE schools. This may partly be due to the fact that there was no significant difference between the two groups regarding physical activity duration. Our finding agrees with earlier studies that found that most adolescents are physically inactive. A study conducted in the same location where this study took place on obesity showed that overweight and obese school children had poor physical activity behaviours in that they spent less hours engaging in any form of physical activity but more time in front of the television screen (Steiner *et al.*, 2012). Diouf *et al.* (2016) also showed in a Senegalese study that children spent most of their time in sedentary and light activities instead of being involved in moderate and intense activity levels. One possible reason for the lack

of significant difference in the physical activity levels between the PE and Non-PE school children was that the PE schools spent less time than what is recommended for PE lessons, sometimes being taught other subjects during the allocated PE period. Although the Non-PE schools did not have physical education as part of their time table, the study showed that the children engaged in activities during break time, thus making them as active as the children attending schools that have the curriculum.

Our study indicated that children attending public schools were more likely to have a longer period of physical activity compared to their counterparts in the private schools. This is contrary to findings from a study conducted in South India that showed that although physical activity was generally low among school children, a higher proportion of children in private schools had adequate physical activity (42% v 18.3%, $p < 0.0001$) compared to the public school counterparts (Dhanpal et al, 2014). It should however, be noted that the above mentioned study defined adequate physical activity as performing more than 20 minutes of aerobic activity for more than three times per week, whilst the current study used the WHO recommendation of at least 60 minutes of activity for at least three times a week (WHO, 2010). It is generally expected that private schools will have better facilities for physical activities, and observations have been made in the past that public schools paid little attention to physical education (Doe, 2005). However, our study shows that not enough time is allocated to actual engagement in physical activities, even if the physical facilities are available. Thus, the adoption of the physical education may not necessarily result in improved activity levels of school children, unless steps are put in place to ensure efficient implementation. There is the need to maximize the time that is allocated to PE by actually involving the children in physical activities.

The findings of the current study are limited by the lack of information on the dietary habits of the participants within the same period. As a result, comprehensive discussion of nutritional status data was limited.

5. Conclusion

The children in the PE schools were not significantly different from those in the non-PE schools in terms of the total amount of time spent engaging in physical activity and their nutritional status (BMI). There were however, differences in the types of activities they engaged in, as well as the frequency of throwing per week depending on the presence or otherwise of physical education curriculum. Additionally children attending public schools were more likely to engage in physical activities for adequate duration. Those who offered PE in their schools had some challenges such as inadequate facilities and inadequate time. The physical education as it currently exists in basic schools in the Ga-East Municipality will have to be reviewed if it is to serve as a tool for improving physical activity among school aged children.

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Appendix

Table 1: Background Characteristics of Study Participants¹

	PE (n = 103)		NPE (n = 98)		p-value
Child's age (years)	12.3	± 1.6	12.5	± 1.8	0.499
Sex (% males)	51	(49.5)	45	(45.9)	0.610
Type of school					
Public	53	(51.5)	48	(49.0)	0.726
Private	50	(48.5)	50	(51.0)	
Educational level of child's mother					
Below Secondary	33	(32.0)	43	(43.9)	0.223
Secondary and above	31	(30.1)	24	(24.5)	
Don't know	39	(37.9)	31	(31.6)	
Household ownership of assets ²					
Low	36	(35.0)	35	(35.7)	0.910
High	67	(65.0)	63	(64.3)	

¹Values are presented as means ± standard deviation or number (%). P-values are based on Independent t-test or Pearson's Chi square test

²A summary indicator of the possession of assets by study households based on car, fridge/freezer, cooker, television, video deck/VCD, air conditioner, and satellite dish/Multi TV. Values ranged from 0 to 7 and a categorical variable was generated from the scores as follows: low (0 to 3) and high (4 to 7).

Table 2: Factors associated with Engaging in Physical Activities for at least 180 minutes per week, based on the final model of the multiple logistic regression

Independent variable	Adjusted odds ratio	95% Confidence Interval
Physical education curriculum: Present (PE), Absent (NPE) ¹	0.41*	0.15 - 1.12
School type: Public, Private ¹	4.83**	1.35 - 17.30
Sex: Male, Female ¹	2.31	0.84 - 6.35
Infant's age (years):	0.99	0.71 - 1.38

¹Reference category of the categorical variables

*p < 0.10, **p < 0.05

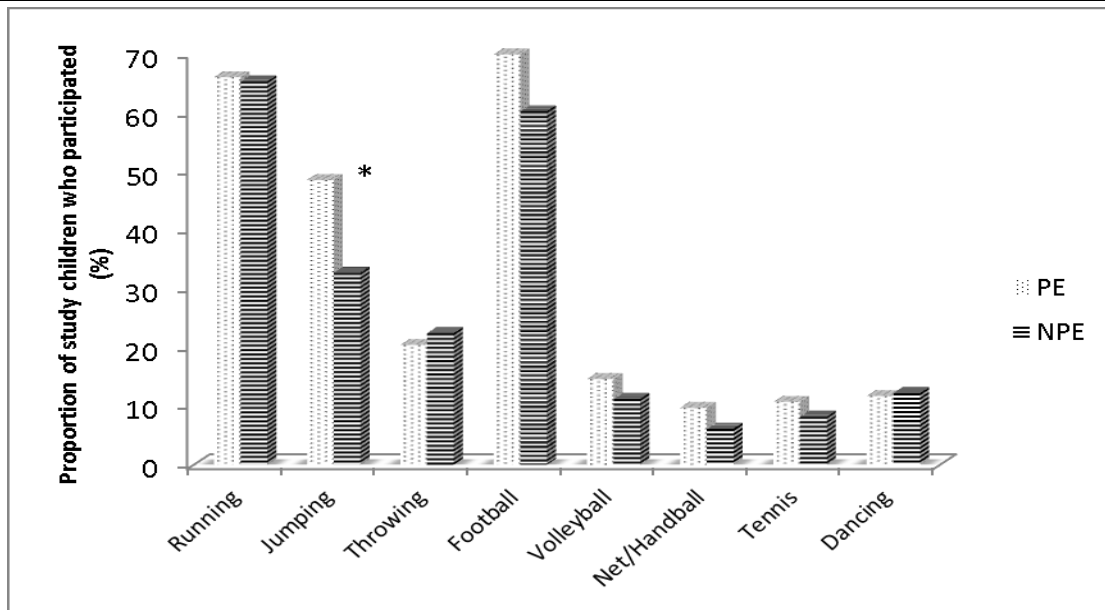


Figure 1: Types of physical activity undertaken by study children on a weekly basis. *p= 0.022

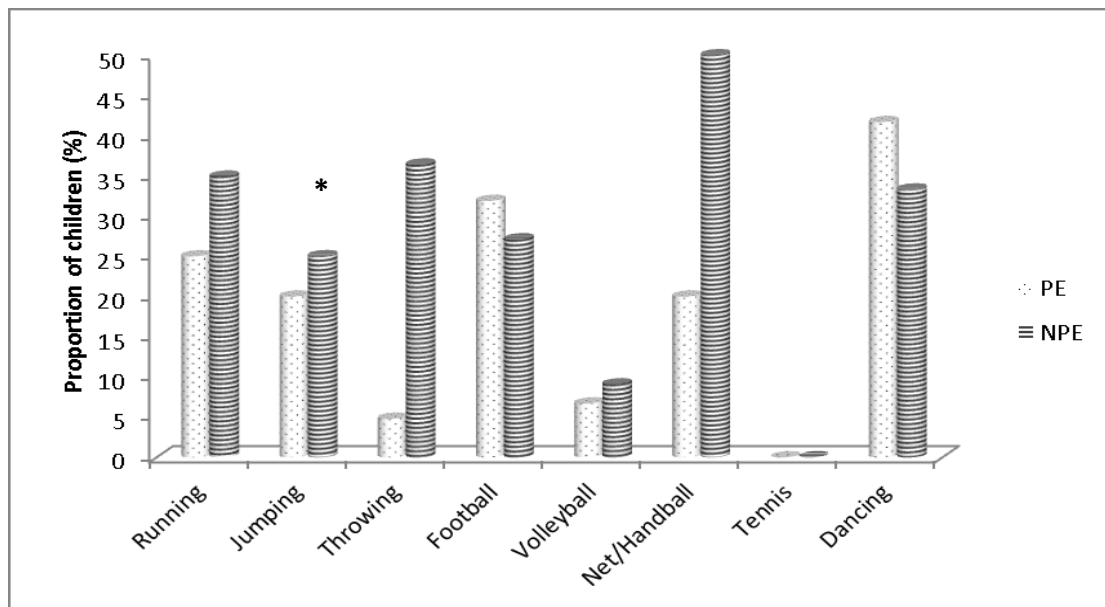


Figure 2: Proportion of study children who participated in physical activities at least three times per week. *p= 0.011

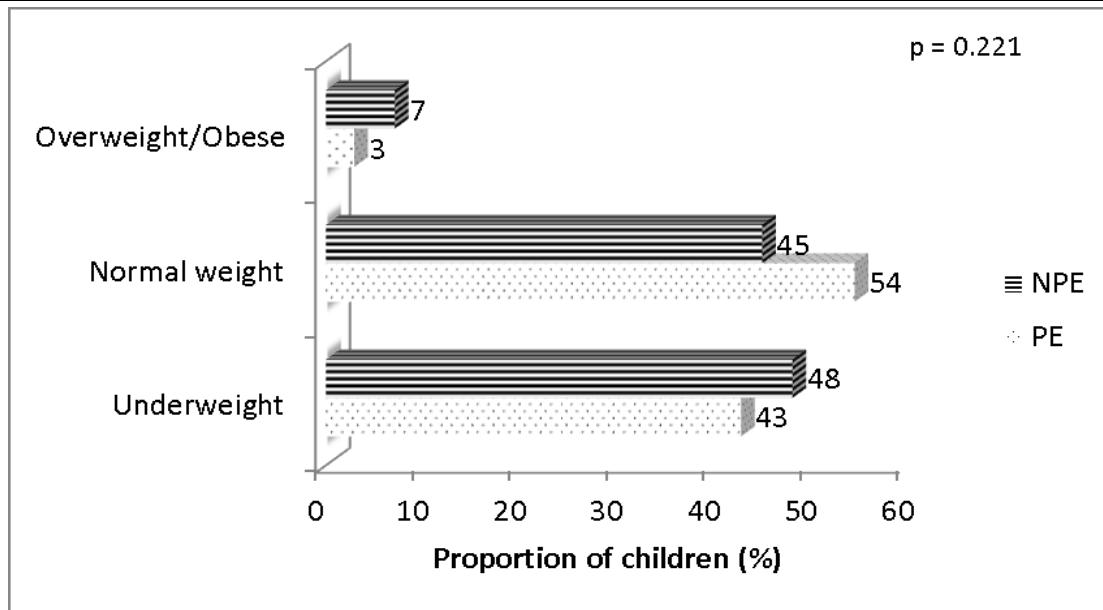


Figure 3: Nutritional status of study children

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