



Research Article



Check for updates

Section: *Geography*

Published in Nairobi, Kenya by Royallite Global in the *Research Journal in Advanced Social Sciences*.

Volume 3, Issue 1, 2022

**Article Information**

Submitted: 5th December 2021

Accepted: 30th January 2022

Published: 4th February 2022

Additional information is available at the end of the article

<https://creativecommons.org/licenses/by/4.0/>

To read the paper online, please scan this QR code

**How to Cite:**

Dimbie, M., Akude, S. K., & Dapilee, F. (2022). Examining the relationship between physical activity and academic performance among primary students at Tumu in the Upper West Region of Ghana. *Research Journal in Advanced Social Sciences*, 3(1). Retrieved from <https://royalliteglobal.com/rjass/article/view/730>



Examining the relationship between physical activity and academic performance among primary students at Tumu in the Upper East Region of Ghana

Mohammed Dimbie¹, Seyram Kafui Akude² & Felicia Dapilee³

¹Tumu College of Education, Ghana

²Peki College of Education, Ghana

³Tumu College of Education, Ghana

Correspondence: Mohammeddimbie@gmail.com

<https://orcid.org/0000-0002-0626-0423>

Abstract

Much research has shown a link between physical activity and students' academic success in school. In recent years, this approach has gained significant traction, particularly in the context of the professional education system. To investigate the association between physical activity and academic achievement in pupils studying in elementary schools, the research team set out to conduct a survey. The purpose of this study is to discover the connections between the two the study's primary objectives was to investigate the association between physical exercise and academic achievement. According to the findings, the study was a cross-sectional study in which 40 students took part. Prior to beginning the investigation, an ethical clearance was obtained. The instruments utilised to acquire data from students were interviews and observation, and the responses supplied by them were then assessed by the researchers. The findings of the study revealed that most students agreed that there was a link between physical exercise and academic achievement, since their test scores were higher than those of students who did not participate in physical activities during their free time. The findings suggest that physical activities can help students focus better on their studies and may even help them achieve academic success.

Keywords: academic performance, physical activity, relationship, students

© 2022 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY-NC-SA) license.

Public Interest Statement

The findings of this study emphasized the relationship between physical activity and academic performance of students to determine whether physical activity participation has any effect on academic performance in Tumu primary schools, allowing stakeholders in education, school administration, and students to make informed decisions about physical activities in schools. Additionally, the findings provided pertinent evidence to individuals who doubt the importance of students participating in physical activities in schools and universities. These individuals would be guided by further data and empirical evidence from which to draw their own conclusions, rather than only speculating. The findings would assist all stakeholders and policymakers in understanding the relationship between sports involvement and academic success in order to structure the school's sports programme for kids. As a source of reference, the discoveries would aid in the advancement of knowledge. The purpose of this study was to contribute to and promote additional research on the association between sports activity and academic success.

1. Introduction

Activities involving vigorous physical exertion or the application of rather complicated physical abilities, driven by personal satisfaction and external reward (Coakley, 2001). Physical activity, on the other hand, is defined by the World Health Organization (WHO) (2014) as any physical motions produced by skeletal muscles that need energy expenditure. This concept broadens the range of activities that can be done to reap the benefits of physical activity.

Physical activity is any bodily exercise that increases energy expenditure over resting levels. Sports-related (e.g., basketball, volleyball), work-related (e.g., lifting and moving boxes) or transportation-related (e.g., gardening) physical exercise can be repetitive, structured and scheduled (example, walking to school). Grade point averages (GPAs), classroom test scores, and other formal examinations are examples of academic performance.

The link between children's physical exercise and academic achievement is currently a hot topic. Studies on the relationship between physical activity and academic achievement in children and adolescents show that there is either a positive relationship or no relationship. Evidence suggests that increased school-based physical activity time does not harm children's academic performance. A review also indicated that more evidence is required to support claims of educational benefits of physical activity. The hypothesis of brain-based learning helps explain the educational effects of exercise. A growing body of research shows a link between academic achievement and physical activity. Physical activity is linked to improved academic achievement in youngsters, according to Chinapaw et al (2012).

Two prior evaluations looked at the impact of exercise on academic achievement. Trudeau and Shephard (2008) review the research on the link between school-based physical activity and academic success. The benefits of regular physical activity and fitness are well known, according to the Department of Health (2004) and the US Department of Health and Human Services (2008).

Physical activity reduces the risk of cardiovascular disease, stroke, some malignancies, obesity, and type 2 diabetes mellitus and is useful in treating several of these disorders (Fox, 2009). Increasing data demonstrates that regular movement and better fitness enhances psychological well-being (Biddle, Fox & Boutcher, 2001; Biddle & Mutrie, 2008). (2009).

Exercise and/or sport participation has been shown to improve mental health. Exercise, for example, has been proven to increase children's physical self-perception and self-esteem (Fox, 2001), albeit the results are mixed. The benefits of regular physical activity for children's

health are widely recognised (Hardman & Stensel, 2009). (WHO, 2010). Physical education is acknowledged as a location that contributes to increasing children's physical activity levels (European Union, 2008; USDHHS, 2008; WHO, 2010).

Moses (2009) stated that persons who engage in physical activity and sports reap many benefits. A life filled with physical activities develops a dynamic healthy existence as well as creative personalities, according to him. Activists believe that sports and physical activity produce a mentally, physically, and medically healthy society.

Education is a cornerstone of any civilised society, and its promotion is vital. Sports may help academics in several ways. Many studies have shown a positive link between sports activity and mental health. Sports and physical activity have been shown to be quite effective in the intellectual growth of participants (Lau, Yu, Lee, So, & Sung, 2004). (Satcher, 2005).

Concerns about education, particularly in developing nations like Ghana, include rising school dropout rates. Many research conducted globally on the relationship between physical activity and academic achievement indicated that teens who are moderately active likely to have better cognitive function. Although data suggests that participation in Physical Activities is beneficial to academic studies, some studies have found no evidence to support these claims, casting doubt on the existence of this link. This term project sought to find out if physical activity affects pupils' academic achievement in primary school. Education is a powerful tool for personal and national transformation. To be able to contribute to the nation's social, economic, and political growth, an individual's skills, values, attitudes, knowledge, and competences must be impacted (Asiyai, 2012). While schooling is good for all children, there are obstacles that must be addressed. However, the ability to address difficulties as they arise is essential to successful living and learning. Studies on students' problems have tended to focus on the problems students cause rather than the problems they confront in school (Kumpulainen et al., 1999; Lundy & Firebaugh, 2005; Porter, Johnson, & Petrillo, 2009). Most studies that may analyze students' issues either focused on a specific issue or were unrelated to academic success. This study intends to investigate the link between physical activity and school achievement.

1.1 Research Objective

To find out whether physical activity in Tumu primary schools influence the academic performance of students positively or negatively in Upper West Region of Ghana.

2. Literature review

According to a review of the literature, previous studies on physical activity have primarily focused on Europe (Bronikowska et al., 2008; Brage et al., 2006; SardinhaL et al., 2004), and Latin American countries such as Brazil (Levy et al., 2014; Kohl 2010; De Lima & Silva 2018), the United States of America (Erzian & Moore 2009), and Nam et al. (2018), with few studies in Africa In general, Nigeria (Yakubu et al., 2016) and South Africa (Tollman et al., 2014) have been the subject of the few previous research of this type in Africa. Peltzer (2010) also examined the phenomenon cross-country, while Guthold et al. (2020) examined it globally. Physical exercise played a minor role in several previous studies with a greater scope in Ghana. Guthold et al., 2020; Peltzer, K., and Peng]. In effect, these studies do not demonstrate a link between attitudes toward physical activity and academic achievement among Ghanaian primary school students. The purpose of this study is to close this knowledge gap by examining the association between physical exercise and academic achievement among Ghanaian primary school pupils.

2.1. Physical Activity and Academic Performance

Over the last many years, society has suffered significant effects as a result of students' lack of physical activity. Inactivity is a risk factor for a number of diseases, including obesity and diabetes. The literature provides modern perspectives on the impact of physical activity on students' learning processes, and recent research demonstrate that regular exercise promotes mental health (Tyson et al., 2010). In the past, it was believed that extracurricular activities had a detrimental effect on academic performance (Lindner, 2002).

In recent years, the relationship between physical activity and academic performance has been examined from a variety of perspectives, including evaluating students' participation in physical activities with the intention of establishing a link between these activities and academic performance (McKenzie 1997; Sallis 1999). These investigations arrived at a variety of contradicting conclusions regarding this subject. A study conducted by one group of experts discovered that there is no correlation between physical activity and academic success (Sallis 1999). Others have discovered that physical activity and academic performance are positively related (Shephard, 1997). Trudeau and Shephard (2008) conducted a comparison between students who engage in physical activity and those who do not, and discovered a positive significant link between physical activity and academic performance, showing that increasing physical activity improves academic performance. Symons et al. discovered that physical activity improves inter-neuronal connections and increases attentiveness (Groff, 1997).

Strong et al. (2005) demonstrated that physical activity had a beneficial effect on health, but found no correlation between cognitive function and physical activity (Pivarnik, et al. 2005). Lindner (2002) conducted a study in Hong Kong and discovered a strong, albeit weak, association between academic achievement and engagement in physical activity. Later, Dwyer et al. (2001) conducted a similar study in the setting of Australian students and discovered a weak link between academic performance and physical activity.

Kao et al. (2017) conducted a study in which they examined the association between aerobic capacity, muscle capacity, working memory, and academic performance in 79 children aged 9 to 11. After controlling for sociodemographic variables, the results indicate that there is a relationship between aerobic capacity, working memory, and mathematical performance. Similarly, physical capacity is associated with working memory. Other research, such as Haapala (2017), found that moderate to intense physical exercise was associated with increased reading fluency ($p < 0.05$) and reading comprehension ($p < 0.05$) in children aged 6 to 8 years. Esteban et al. (2015) found that sedentary activity (surfing the internet, listening to music, and sitting quietly) has a negative correlation with academic achievement ($p > 0.05$) among 1146 students (12.5 years old). Maureira et al. (2014) analysed 309 secondary school pupils, examining the association between physical activity and language, mathematics, history, and science. They discovered a favourable relationship solely with mathematics, presumably because this discipline shares features with motor execution.

In contrast to earlier findings, a study by Esteban et al. (2014) found no correlation between physical activity and academic achievement in 1780 individuals aged 6 to 18 years (48.5 percent male and 51.5 percent female). The authors conclude that the amount of time spent on physical activity is insufficient in terms of duration and intensity to effect significant changes in the school environment. Recent research has accumulated a growing body of evidence demonstrating the favourable effects of physical exercise on brain functioning, which contribute to an increase in academic performance. This improvement is typically accompanied by the formation of new cerebral blood vessels, an increase in synaptic density, an increase in glia, and an increase in neurogenesis.

Rohini et al. (2014) examined the effect of physical activity on the academic performance of medical college students. According to the study's findings, physical exercise in students increases arousal and decreases boredom, both of which are necessary for students to pay attention to their studies for an extended period of time, when compared to students who are not physically active. The study revealed that physical activity benefits students in a variety of ways, most notably their academic performance. Thus, school and college administrators should acknowledge the benefits of physical activity and encourage students to participate in a variety of extracurricular activities.

Apaak & Sarpong (2015) showed in a study that time constraints and physical/emotional strain were significant factors affecting the academic performance of student-athletes in Ghana's public colleges. Opoku et al. (2019) discovered that sports participation does have an effect on the academic performance of student-athletes at Offinso College of Education when compared to non-student-athletes. According to Talbot (2001), physical education helps children develop respect for their own and other people's bodies; contributes to the integrated development of mind and body; fosters an understanding of the role of aerobic and anaerobic physical activity in health; positively impacts self-confidence and self-esteem; and promotes social and cognitive development and academic achievement. Hylok (2011) conducted a study in which she explored student perceptions to explain the relationship between physical activity and academic achievement in adolescents; the findings indicated that most participants agreed that physical activity does influence academic performance, while a minority disagreed.

There have been no research examining the association between physical exercise and academic achievement within the study area, much less among young adults. The proposed study intends to close this knowledge gap to aid in the implementation of future physical activity programmes and policies. This project will add to the body of knowledge about physical activity by advising parents, educators, and community leaders on ways to boost primary school students' physical activity to improve their general health and academic performance.

3. Methods and materials

3.1 Research Design

This study will take a qualitative approach. Qualitative research tries to comprehend and elucidate what is occurring in a social setting. As such, it is involved with "observing and interpreting reality with the goal of building a theory that will account for the observed phenomena" (Newman & Benz, 1998.). The purpose of research varies according to the situation being investigated. As a result, the research lacks a distinct organization (Howe, 1988). Rather than that, it may evolve throughout time in response to emergent occurrences. According to Creswell (2014), qualitative research is a method for elucidating and comprehending the meaning that individuals or groups attach to a social or human situation.

3.2 Data Collection

Merriam (2002) proposed that in qualitative research, data analysis and collecting occur concurrently in order to evaluate pertinent results and themes while the researcher's experience is still fresh. The study gathered data from primary and secondary sources. Primary data were gathered through interviews with students and observations to ascertain the association between physical activity and academic achievement and its effect on pupils. Field notes taken during classroom observations were utilised to describe students' attitudes, behaviours, and interactions before to, during, and after the association between physical

activity and academic achievement was established. On the other side, secondary data will be gathered from both published and unpublished reports, document reviews, journal articles, institutional reports, and other studies pertinent to the issue. The data were gathered in a variety of ways. The study collected data from participants through observation and interview. Creswell (1998) advocated for the adoption of an observation technique that incorporates both descriptive and reflective notes (full descriptions of what is occurring in the environment) (thoughts and questions that occur to the observer at the time they occur).

3.3 Sampling Design and Techniques

To conduct this study, non-probabilistic sampling techniques such as purposeful sampling and convenience sampling will be used. Purposeful sampling is a technique extensively used in qualitative research for identifying and selecting cases with a lot of information to make the most use of scarce resources (Patton, 2002). This entails discovering and sifting through individuals or groups of individuals who are particularly informed or experienced regarding a certain topic of interest (Creswell, 2013). Researchers utilise convenience sampling to select individuals or groups who are available and willing to engage in the research now. Additionally, the term “volunteer sampling” or “accidental sampling” is used (Mugenda & Mugenda, 2003). Students were chosen using the sample techniques described previously.

3.4 Target Population

This study included 150 primary school kids from large public schools in Tumu, Ghana’s Upper West region, during the 2018-2019 academic calendar year. The students ranged in age from kindergarten to primary six. The school district has a total enrollment of 25,000 pupils. The study’s school had 150 students in grades 9-15 and 50 instructors, resulting in a student-teacher ratio of 19:3.

3.5 Data Analysis

The study collected data for my inquiry using a variety of ways. According to Creswell (1998), there is no universally accepted approach for analysing all types of qualitative data. However, major authors and scholars in the field discovered certain similar aspects. Bogdan and Biklen (1992), Miles and Huberman (1994), and Wolcott (1994) described the following efficient strategies for analysing qualitative data:

- i. Make marginal notes on all field notes.
- ii. As the observer, compose observation remarks with reflective notes.
- iii. Transcribe interviews in such a way that all pertinent information is recorded
- iv. Create visual representations such as tables, charts, and diagrams
- v. Identify and categorize themes
- vi. Organize your evidence in a logical chain
- vii. Propose a reorganization of the study.

These procedures were critical in decreasing the data to a size that I felt appropriate for the current investigation. I began by compiling a list of themes that developed during my literature review. This was followed by an analysis of interview transcripts to continue identifying emergent themes. Following the transcription analysis of interviews, field and observational notes were evaluated and classified into theme units. Following the coding and categorization of all interviews, field notes, and observation notes.

3.6 Trustworthiness and Transferability

Triangulation of data was identified as important within qualitative research studies to ensure consistency and dependability (Merriam, 2002). The triangulation of data came from interviews, observations, and documentation from each school. Because schools selected are all offering physical activity, I was able to compare observational and interview data. I discovered the relationship between the physical activity and academic performances of the participants. When attempting to build trust worthiness and confidence in the transferability of knowledge gained in a qualitative study, Merriam (2002) recommended the following techniques, triangulation

- Peer review
- Observation and field notes
- Extensive time in the field Qualitative studies are often subject to criticism based on the high level of involvement of the researcher, who functions as an integral part of the data collection.

Creswell (1998) indicated that this could be problematic in the integration of a bias in collected data. For these case studies I functioned as an interviewer, an observer, and a data collection resource, as well as constructing meaning from the data collected. This presents issues of bias and the integrity of the study can come into question. Creswell (1998) recommended using peer reviews, bias clarification, data collection audits and triangulation to address these limitations.

4.0 Results and Discussion

The study examined extreme variances in physical activity and academic achievement through the use of extreme case sampling, a type of deliberate sampling. Thus, it was vital to examine students' views of physical activity and academic accomplishment in order to acquire a better understanding of the relationship between physical activity and academic achievement. During this time period, ten to twelve volunteers were randomly chosen from each of the four extreme schools to engage in focus groups and interviews.

The purpose of this study is to summarise qualitative data in order to address the following research question: What is the relationship between physical exercise and academic achievement?

A. High physical activity and high academic achievement.

Each of the participants emphasized they were physically active when they were involved in physical activity and continue to be physically active. They described their memories of physical activity as social,

"Playing in their houses with neighbor kids" and "playing with all my friends".

All participants agreed the reasons they continue to be involved in physical activity was because it makes

" them happy" and their parents expect them to "do something after school instead of just sitting around."

For some participants environmental factors have continued to influence their participation today.

"It was our lifestyle growing up" and "my mom owns a gym." Some students felt physical activity overall has had a positive impact on their learning.

However, one participant felt physical education classes.

"Do not count as physical activity because I think physical activity does not make me happy."

All participants felt physical activity improved health, one of the participants stated that.

"Physical activity keeps me in shape, improves my body, makes me feel good and happy."

When asked about academic performance subjects, participants mentioned their favorite classes subjects were math, science, and English. They described how parents created a lot of pressure to get good grades. One participant also mentioned that

"I get grounded, and so I'm kind of like forced by my parents to get straight A's."

Overall, participants felt there was a relationship between physical activity and academic performance. Participants showed a strong sense of self-efficacy. They discussed the importance of setting goals for academics and physical activity.

B. High physical activity and low academic achievement.

All participants emphasized they were physically active when they involved in physical activity. The reasons gave reasons for physically active.

"It's fun; I like that it's competitive" and "I like being part of a team, and just like having that trust in other people."

One participant described. *"Feeling confident that I can actually do something."*

Another participant stressed the importance of physical activity in his life, *"my goal is to go high in sport."* This participant also shared an environmental influence on his participation.

Students felt physical activity has a positive impact on their learning in the next class after completing physical activity. *"I feel more awake" and "motivated and pumped up."*

Students criticized that when they participate in too much physical activity it can leave them exhausted for class, *"it's like an energy drink, gets you hyped up, then you crash"*.

Some participants also felt finding the time to do homework was difficult, *"sports just like cuts into our lives and our school work too."*

All participants recognized physical activity improved health, stating it *"keeps me fit" and "in better shape"*.

Participants discussed how physical activity should be *"fun, where you get to be with your friends" and "you don't feel the stress of your parents"*.

When asked about academic performance, participants understood the importance of high academic performance; they felt *"high academic performance would help to get into next Class" and "they would build their future"*.

Overall, participants felt there was a relationship between physical activity and academic performance.

They discussed first a negative connection, *"if you work out real hard and then you don't get much sleep because of the weakness of the body, you could be tired while you're taking a test."*

They also discussed the positive relationship *"it gets my blood flowing so I can think better" and it keeps me more awake and focused for class."*

4.1 Discussion

The study results and the findings were discussion and linked to previous studies as follows;

A. High physical activity and high academic achievement.

The qualitative replies indicate that most students believe there is a good association between physical exercise and academic achievement, while a minority say there is no relationship.

"Without physical activity, I would be always exhausted at school and would lack motivation to accomplish my assigned work."

I am a firm believer that physical activity benefits brain function. Another minority of students feel that physical activity improves grades, however excessive exercise can have the opposite effect. "At times, my physical activity interferes with my academic performance because I am more concentrated on my sports." The remaining pupils were unsure whether physical activity and academic achievement were related.

B. High physical activity and low academic achievement.

According to the qualitative responses, the majority of students believe that physical exercise and academic achievement are positively related, whereas a minority believe that they are negatively related.

"I get better scores the more active I am."

"I believe physical activity is beneficial. It helps me stay alert and engaged during class." Additionally, a small number of students feel that there is no correlation between physical activity and academic achievement.

"I don't believe it improves grades. You must be motivated to better your academics and yourself. I don't believe physical activity influences that." The remaining pupils were unsure whether physical activity and academic performance were related.

C. Low physical activity and high academic achievement.

According to the qualitative replies, the majority of students believe that physical activity has a good influence on academic achievement, while a minority believe that it has a negative effect. Another minority of students feel that physical activity improves grades; however, excessive physical activity might have a negative impact on academic performance. "I believe that modest regular physical activity can improve grades; nevertheless, if it gets too severe or time-consuming, I believe that grades will suffer." Intense workouts can tire someone out to the point that they can't concentrate well, and they frequently take time away from studying. Another group of students believes that there is no link between physical activity and intellectual ability.

"I receive good marks but seldom engage in physical activity."

"I don't feel that my physical activity improves my academic performance." "I've always gotten straight A's and B's." The remaining pupils were unsure whether there was a link between physical activity and academic performance.

D. Low physical activity and low academic achievement.

According to the qualitative responses, most students believe that physical exercise and academic achievement are positively related, whereas a minority believe that they are negatively related.

"Physical activity helps you stay concentrated and staying focused helps you earn good marks." Another small percentage of pupils said that there is no correlation between physical activity and academic ability.

"Physical activity has little bearing on academic performance unless you play for a team that requires good grades."

The remaining pupils were unsure whether physical activity and academic performance were related. The study's findings reveal that physical exercise and academic success are positively correlated. Our findings are consistent with those of numerous other research, articles, publications, and policy documents that detail desirable qualities of physical

education and sports participation procedures and with which this current study agrees. For example, Talbot (2001) asserts that physical education helps children develop a healthy respect for their own and other people's bodies; it contributes to the integrated development of mind and body; it fosters an understanding of the role of aerobic and anaerobic physical activity in health; it boosts self-confidence and self-esteem; and it promotes social and cognitive development and academic achievement.

This study also strongly concurred with Hylok (2011), who examined student perceptions to better understand the relationship between physical activity and academic achievement in adolescents; the findings indicated that most participants agreed that physical activity does influence academic performance, while a minority disagreed. Dwyer et al. (2001) conducted a similar study in an Australian high school context and reported a weak correlation between academic achievement and physical activity. There is no association between physical activity and academic success, according to a study done by one group of academics (Sallis 1999).

5.1 Conclusion

Numerous researchers have discovered and believe in a relationship between physical exercise and academic success, while some studies, such as this one, have discovered the opposite. This study sought to determine the association between physical activity and academic performance. The study hypothesized that physical activity could have an effect on children's ability to learn and function academically. Although the results demonstrated a significant linear relationship between physical activity and academic accomplishment, the study's participants saw a link between physical activity and academic achievement. All participants stated that physical activity is critical for their health and has a beneficial effect on their learning. Social effects, self-efficacy, support, surroundings, academics, and motivation were determined to have the biggest impact on physical activity participation.

5.2 Recommendations

1. School administrators, faculty, and parents should promote and push children to participate actively in sports, as research has demonstrated that physical activity helps pupils perform well academically.
2. School officials should avoid scheduling sports and instruction concurrently, if possible, as children engaged in physical activity are penalised by missing classes.
3. School administrators are urged to structure their schools, lessons, and curricula in such a way that sports are given the appropriate space and time, so enabling all children who are sports educated to participate in sports.
4. Students in primary school should also learn how to manage their time effectively between sports and academics.

References

- Andersen L. B, Harro M, Sardinha L. B, Froberg K. E, & kelund U, Brage (2006). Physical activity and clustered cardiovascular risk in children: a cross sectionals tudy (TheEuropeanYouthHeartStudy).*TheLancet*, 368(9532), 299–304.
- Amika S, Le´onie U, Jos W. R. T, Willem van M, M.D; Mai J. M. ,(2012) Physical Activity and Performance at School A Systematic Review of the Literature Including a Methodological Quality Assessment.
- Bogdan, R. C., & Biklen, S. K. (1992). *Qualitative research for education: An introduction to theory and methods*. Boston: Allyn & Bacon.
- Creswell, J.W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches*. (4th ed.). Thousand Oaks, CA: Sage.
- Coakley J.J (2002) Using sports to control deviance and violence among youths, Gatz M, Messner MA, Ball-Rokeach SJ (Eds). *Paradoxes of youth and sport*. Albany, NY, State University of New York Press, 13–30.
- Fox, K.R. (2001). The future health professional: multidisciplinary and multi-skilled to address Nutrition and physical activity. *Nutrition Bulletin*, 26, 163_164.
- Lindner, K.J., (2002).The physical activity participation–academic performance relationship revisited: Perceived and actual performance and the effect of banding (academic tracking). *Pediatr. Exerc. Sci.*,14, 155–169.
- Tyson, P.; Wilson, K.; Crone, D.; Brailsford, R.; Laws, K. (2010), Physical activity and mental health in a student population. *J. Ment. Health*, 19, 492–499.
- McKenzie, T.L.; Sallis, J.F.; Kolody, B.; Faucette, F.N. (1997) Long-term effects of a physical education curriculum and staff development program: SPARK. *Res. Q. Exerc. Sport*, 68, 280–291.
- Sallis, J.F.; McKenzie, T.L.; Kolody, B.; Lewis, M.; Marshall, S.; Rosengard, P. (1999) Effects of health-related physical education on academic achievement: Project SPARK. *Res. Q. Exerc. Sport*, 70, 127–134.
- Shephard, R. (1997) Curricular physical activity and academic performance. *Pediatric Exercise Science*, 9, 113–125.
- Strong, W.B.; Malina, R.M.; Blimkie, C.J.; Daniels, S.R.; Dishman, R.K.; Gutin, B.; Hergenroeder, A.C.; Must, A.; Nixon, P.A. & Pivarnik, J.M. (2005) Evidence based physical activity for school-age youth. *J. Pediatr.* 46, 732–737.
- Trudeau, F.; Shephard, R.J.& Physical (2008) education, school physical activity, school sports and academic performance. *Int. J. Behav. Nutr. Phys. Acta*, 5, 10.
- Symons, C.W.; Cinelli, B.; James, T.C.& Groff, P. (1997) Bridging student health risks and academic achievement through comprehensive school health programs. *J. Sch. Health*, 67, 220–227.
- Sallis, J.F.; McKenzie, T.L.; Kolody, B.; Lewis, M.; Marshall, S. & Rosengard, P. (1999)Effects of health-related physical education on academic achievement: Project SPARK. *Res. Q. Exerc. Sport*, 70, 127–134.
- Dwyer, T.; Sallis, J.F.; Blizzard, L.; Lazarus, R.; Dean, K. (2001) Relation of academic performance to physical activity and fitness in children. *Pediatr. Exerc. Sci.* 13, 225–237.
- Lindner, K.J. (2002) the physical activity participation–academic performance relationship revisited: Perceived and actual performance and the effect of banding (academic tracking). *Pediatr. Exerc. Sci.*, 14, 155–169.
- Howie, E.K. & Pate, R.R.(2012) Physical activity and academic achievement in children: a historical perspective. *J. Sport Health Sci.* 1 (3), 160–169.

- Maureira F, Díaz I, Foos P, Ibanez C, Molina D, et al. (2014) Relación de la práctica de actividad física y el rendimiento académico en escolares de Santiago de Chile. *Revista de Ciencias de la Actividad Física UCM* 15(1), 43-50.
- Esteban I, Martínez D, Sallis J, Cabanas V, Fernández J, et al. (2015) Objectively measured and self-reported leisure-time sedentary behavior and academic performance in youth: The UP&DOWN Study. *Prev Med* 77: 106-111.
- Kao S, Westfall D, Parks AC, Pontifex M.B & Hillman C.H (2017) Muscular and Aerobic Fitness, Working Memory and Academic Achievement in Children. *Med Sci Sports Exerc* 49(3): 500-508.
- Haapala EA, Väistö J, Lintu N, Westgate K, & Ekelund U, (2017) Physical activity and sedentary time in relation to academic achievement in children. *J Sci Med Sport* 20(6): 583-589.
- Patton, M.Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Muñoz H.D (2017) Physical Exercise and Academic Performance. *MOJ Sports Med* 1(4): 00021. DOI: 10.15406/mojism.2017.01.00021
- Merriam, S. B. (2001). *Qualitative research and case study applications in education* (2nd ed.). San Francisco: Jossey-Bass.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Mugenda, O. M. & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.
- Newman, I., & Benz, C. R. (1998) *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale, IL: Southern Illinois University Press..
- Krośl-ZielińskaM, Groffi KD, BronikowskiM, Kantanista A ,Laudańska-Krzemińska & I, Bronikowska M. (2018) .Understanding the Motives of Undertaking Physical Activity with Different Levels of Intensity among Adolescents: Results of the INDARES Study. *Bio Med research international*.
- Riddoch CJ, Andersen LB, Wedder kopp N, Harro M, Klasson-Hegge B.L,& SardinhaL B. (2004) Physical activity levels and patterns of 9-and15-yr-oldEuropeanchildren. *Medicine & Science in Sports& Exer-cise*, 36(1):86-92
- Wolcott, H. F. (1994). *Transforming qualitative data: Description, analysis, and interpretation*. Thousand Oaks, CA: Sage.
- WHO (2014). Reproductive health. WHO. URL. [Internet] available from <http://www.who.int/topics/reproductive_health/en/> (accessed 4.1.14).
- U.S. Department of Health and Human Services. (2008). Physical activity guidelines advisory committee report, 2008. Washington, DC: U.S. Department of Health and Human Services.
- Opoku, E., Kyeremeh, C., Odoom, D. (2014). Local revenue mobilisation mechanisms: Evidence from Abura-Asebu-Kwamankese District in Ghana. *Developing Country Studies*, 4(26): 125-137. <http://www.iiste.org/journals/>. Date accessed 12/12/2015.