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Gender Effect on Academic Performance of Junior High School Athletes in Ghana: A Case Study of Komenda, Edina, Eguafu and Abirem Municipality in Central Region

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Abstract

The study investigated the effect of gender on academic performance among junior high school athletes within the Komenda, Edina, Eguafu and Abirem (K.E.E.A) Municipality of Central Region, Ghana. Fifty percent of all 594 final year students who participated in the 2014 Inter-Schools Games and Athletics Competition in the municipal area were selected as sample using random sampling technique. Secondary data, comprising raw examination scores obtained by selected athletes in core subjects during the 2014 J.H.S. 3 Mock examination, was used. Findings revealed; significant gender difference in mathematics with male athletes performing better than females, no significant gender differences in english, science and social studies, although performance was generally poor, concluding that the effects of sports participation on academic performance may be more detrimental on females than males at that level. It is recommended that; authorities in charge of school sports (Ghana Education Service) should re-evaluate the participation of girls in sports activities within the municipal area to ensure that female athletes do not suffer academically and comparative study involving athletes and non-athletes should be conducted to investigate whether participation in sports accounted for the poor academic performance observed.

Keywords: Academic Performance, Athlete, Gender, Sports Participation

1. Introduction

The relationship between participation in school sports and academic performance has been studied extensively, particularly in places such as America and Europe (Schneider, 2010)^[1]. This is because school sports activities are believed to support the academic missions of schools and are inherently educational, providing valuable lessons for practical situations such as teamwork, sportsmanship, winning and losing, and hard work (Öcal, 2006; Central Council of Physical Recreation, 2002 United States Sports Academy, 1999)^[2, 3, 4]. Playing sports in school leads to a better learning environment, improves academic achievement, reduces truancy and also enhances cognitive and social development (Central Council of Physical Recreation, 2002)^[3].

Veliz and Shakib (2014)^[5]. are of the view that while there is overwhelming research evidence on the positive effects of sports participation on various academic performance variables among students, there is still an ongoing debate as to how sports participation affects a demographic factor like gender. These authors (Veliz and Shakib) went further to add that although results are mixed in relation to whether the effects of sports participation on academic performance is much stronger on male or female participants, findings from numerous studies point to the fact that males and females who participate in sports perform better academically compared to their peers who do not participate in sports activities.

Academic performance is seen as a sine qua non to any formal educational institution all over the world and as such numerous researches have been conducted to find out factors that influence it. Some factors mentioned in current literature are; class attendance, age, learning styles or preferences, gender, class size, entry qualification, family income, extracurricular activities, peers influence and course assessment, parent's education (Jayanthi, Balakrishnan, Ching, Latiff & Nasirudeen, 2014 ; Ali, Haider, Munir, Khan & Ahmed, 2013; Mlambo, 2010)^[6, 7, 8]. Gender as an influencing factor has attracted a lot of attention from researchers quite

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recently because there appears to be a shift from male dominance in academic performance to female dominance in virtually all spheres of education. As noted by Goldin, Katz and Kuziemko (2006) ^[9], there has been widespread concern over gender patterns in academic performance recently because of the believe that females are now “doing better” than males in a number of key academic areas.

1.1 Literature Review

Literature on gender differences in academic performance outside sports in Ghana show varying results depending on the level of education and subject(s) studied. Nyame (2010) ^[10], studied the relationship between students’ class attendance and academic performance at the Junior High School level in Kumasi Metropolis and found out that male students (mean score - 451.27) performed better than female students (mean score - 441.84). These findings led the researcher to conjecture, borrowing from Hedges and Nowell (1995) ^[11], that males may be academically better than females naturally based on the fact that their cognitive abilities are much more variable than females. Ampofo and Osei-Owusu (2015) ^[12], conducted a study on whether students’ sex was a mediating factor in their academic performance in mathematics and english at the Senior High School level in the Ashanti Mampong Municipal Area of Ghana. Chi-square results obtained showed that there was no statistically significant association between a students’ sex and his/her academic performance in either mathematics or english. In other words, the study revealed that there were no differences between male and female performance in mathematics and english at that level. Olaewe (2015) ^[13], on the other hand found out in a study carried out in the Tamale Metropolis of Northern Ghana, that there were significant gender differences in academic performance in mathematics among Senior High School students, with males performing better than females. Asante (2010) ^[14], also reported such similar clear-cut sex differences in mathematics performance between boys and girls in high schools, with males outperforming females. Anamuah-Mensah (1995) ^[15], revealed from a study covering science subjects (Physics, Chemistry, Biology) that generally boys performed far better than girls in all science subjects examined between 1981-1991 in Ghana at the Secondary School level. Oppong (2013) ^[16], concluded from a study that there were significant differences in academic performance between male and female Senior High School History students on essay examinations, with female students doing better than their male counterparts. Majority of studies carried out to investigate the relationship between sports participation and academic performance of students revealed gender differences in the relationship. Lumpkin and Favor (2012) ^[17], found out that, overall females consistently outperformed males on Grade Point Averages (GPA). Among athletes, 87% of females reported a 3.0 GPA or above compared to 74% of male athletes. These findings suggested that female athletes appeared to either be the more serious students or had found better methods of balancing their academic and athletic commitments. The results also showed that among athletes, males outperformed females significantly on mathematics and science, whilst females scored significantly higher than males on english and reading in American College Tests (ACT). Lumpkin and Achen (2014) ^[18], also reported similar findings, when they found out that, female athletes scored significantly higher on ACT english and reading than male athletes, whilst male athletes scored significantly higher on ACT mathematics and science than female athletes.

According to Schneider (2010) ^[1], a research study including 4,746 students from Minnesota was conducted during the 1998-1999 school year and results showed that male students’ grades benefited when they participated in school sports than female students. Schneider further indicated that participation in high school sports for young women was found to have an overwhelmingly positive correlation to academic performance in science, which traditionally was thought of as a male-dominated field. Ryska (2003) ^[19], in finding the impact of gender on the effects of sports participation on educational outcomes examined a sample of 235 public high school students both male and female. The results showed that male student athletes had greater academic and behavioral conduct competences than their female athlete counterparts. Fox, Barr-Anderson, Neumark-Sztainer, and Wall (2010) ^[20], also stated that high school boys GPAs had a positive relationship with the number of sports participated in. Gorman’s (2010) ^[21], finding in a study that looked at the effect of athletic participation on academic achievement for high school seniors in eastern Tennessee revealed that, there were statistically significant differences between male and female athletes in ACT english, mathematics, reading and science. Silliker and Quirk (1997) ^[22], noted from a study that female athletes had less of a difference between in season and out season grades compared to their male counterparts. Crosnoe (2002) ^[23], picking from where Silliker and Quirk (1997) ^[22], left, concluded from another study that female athletes had the highest grade point averages than male athletes. In the opinion of Coe, Pivarnik, Womack, Reeves and Malina (2006) ^[24], there was a growing notion among researchers that female athletes were achieving higher academic results than their male peers. Stegman and Stephens (2000) ^[25], also noted that female subgroups significantly outperformed their male peers in all the variables measured in a study including grades. A research conducted by Shachaf, Katz and Shoval (2013) ^[26], titled “The Unique Trio: Academic Achievement, Sport, and Gender” in Israel revealed that female athletes who participated in competitive school sport attained significantly higher scores on numeracy ($F_{(1,168)} = 4.42, p < .05, \eta^2 = .03$) and verbal reasoning ($F_{(1,168)} = 22.16, p < .001, \eta^2 = .12$) than their male counterparts. Videon (2002) ^[27] postulated based on evidence adduced from research that males might benefit more than females academically from sports participation. Findings from two studies by Hanson and Kraus (1998; 1999) ^[28, 29], revealed that participation in school sports had a positive influence on the academic performance and attitude of female athletes in mathematics and science when compared with that of male athletes. Similarly, Pearson, Crissey, and Riegle-Crumb (2009) ^[30], found out that female athletes reported the strongest positive association between participation in sports and advanced physics coursework when compared to male athletes, leading to the conclusion that participation in school sports, a “traditionally masculine domain,” might lead to greater feelings of female competence in other “traditionally masculine domains,” such as science. These studies on the other hand found no difference in academic performance between male and female athletes. Shriver (2008) ^[31], concluded from her study that students’ gender and athletic participation did not significantly affect students’ performance on Tennessee Comprehensive Assessment Program Achievement Test (TCAP) subtests in english reading, mathematics, science and social studies. Fleenor (1997) ^[32], compared a sample group’s scores to those of the students from the rest of the United States in a study to determine the effects of participating in school sport program

on Comprehensive Test of Basic Skills (CTBS) test percentiles of students in 4th and 11th grades. The CTBS Test is a multi-choice, national standardized examination that covers mathematics, language and reading in America. In the study, both male and female students who either did not play at all or who participated in school-sponsored sports competitions at any time from 4th grade through 11th grade participated. Each group contained 10 boys and 10 girls. The data evaluation showed no significant differences in the CTBS percentiles of any of the groups in this study. The two groups showed no significant differences when analyzed together. Results of the study therefore suggested that no negative/positive effects on academic achievement were found for students' participation in sports across gender. Stephens and Schaben (2002) [33], and Spreitzer and Pugh (1973) [34], were of the view that although research had shown positive association between school sports participation and academic performance across gender, the effects on males or females depended strongly on the type of study conducted.

At the university or college level, majority of studies reviewed using Grade Point Average (GPA) as the measure of academic performance showed female athletes outperforming male athletes (Amos, 2013. Dilley-Knoles, Burnett & Peak, 2010 [36]; Milton & Gottschalk, 2010 ; Scott, Paskus, Miranda, Petr & McArdle, 2008; Covington, Simons & Van Rheenen, 1999) [35, 37, 38, 39]. The Institute for Diversity and Ethics in Sports (TIDES), University of Central Florida (2013) [40], Finley and Fountain (2007) [41], Gohl (2001) [42], and the National Collegiate Athletics Association (1999) [43], using graduation rate as the measure of academic performance, all reported that female student-athletes graduated at higher rates than male student-athletes. Georgakis, Wilson and Ferguson (2014) [44], examined the academic achievement of elite athletes at an Australia University. Results showed females performed better than males, with higher proportions in credit (females-36.38%, males-34.31%), distinction (females-23.98%, males-19.12%) and high distinction grades (females-6.81%, males-3.76%). The Bucknell University Committee on Athletics (2005) [45], in a study titled "The Effect of Varsity Athletic Participation on Academic Performance: Evidence from the 2004 Graduating Class", reported findings that suggested that male and female athletes did not differ significantly in cumulative GPA. Apaak and Sarpong (2015) [46], using Final Cumulative Grade Point Average (FCGPA) as measure of academic performance also reported no differences in academic performance between male and female athletes of the University of Cape Coast, Ghana. These two studies appear to contradict the general trend observed that female athletes are doing better than male athletes in most measures of academic performance at the university or college level.

Gender differences in academic performance are attributed to a number of reasons. From the biological point of view differences in structure and function of male and female brains account for differences observed in academic learning and performance (Gurian & Ballew, 2003) [47]. According to Dronen, Weller, Augustynski, Fisher, Goff, Hofschield, Palzet, and Rusnak (2006) [48], these brain based differences affect the learning process in eight neurodevelopmental systems that is: attention control, memory, language, spatial ordering, sequential ordering, motor, higher thinking, and social thinking. As a result of all these differentials in neurodevelopmental systems, girls tend to have an advantage in the early grades by utilizing the strength of their left hemisphere in speaking, reading, and writing and using their right hemisphere to feel empathy and to understand and reflect

in a better way feelings of their teachers and peers. Boys on the other hand tend to have an advantage in their left hemisphere by being able to recall facts and rules and categorize things. The right-brain strength of boys encompasses visual-spatial and visual-motor skills, which enables them excel in topics like geography, science, and mathematics (Jackson, 2008) [49]. Some studies have also suggested that differences observed between male and female in terms of academic performance are due to maturity differences (Gurian & Stevens, 2004) [50]. At school going age girls turn to mature socially and verbally than boys, while boys also mature physically and actively than girls. This results in girls learning to read and write earlier than boys.

Social and cultural norms imposed on male and females have also been used to explain gender differences in academic performance. Mathematics, science and engineering as academic disciplines are viewed as "Masculine" in certain societies and therefore look less appealing to females, while courses such the languages and arts are seen as "feminine" and less appealing to males (Correll, 2004 ; Sadker & Sadker, 1994) [51, 52]. Expanding the socio-cultural reason further, Pearson *et al.* (2009) [30], argue that current differences in certain academic fields have gendered legacies that create obstacles for members of the opposite sex to surmount. According to these authors, socialization processes expose girls and boys to societal gender stereotypes about gender-appropriate courses to study, and may lead to adolescents avoiding certain courses or subjects for fear of being stigmatized or may internalize these stereotypes and loose confidence in their own abilities in those non gender-typical areas. It has also been postulated by Eccles, Barber and Jozefowicz (1999) [53], as well as Hanson and Kraus (1998) [28], that girls lag behind boys in science courses because such courses require characteristics such as independence and competition, skills boys are socialized to have more than girls, and therefore boys often chose and performed well in those courses compared to girls.

Within a sports context, views explaining gender differences in academic performance among athletes are varied, depending on whether males are outperforming females or the vice-versa. Explaining why female athletes appear to be doing better than male athletes in so called "masculine" courses like science, Pearson *et al.* (2009) [30], are of the opinion that female participation in sports may impart skills such as self-confidence and the ability to resist traditional gender roles, things needed by girls to succeed in historically masculine academic fields, therefore positive effects of sports on girls' performance in "masculine" subjects such as science suggest that sports participation helps girls resist conventional gender scripts. Another angle to this discourse in the view of Miller, Sabo, Farrell, Barnes and Melnick (1998) [54], is that girls may be translating certain skills or resources such as competition, emphasis on achievement, assertiveness, and independence provided by sports into other domains (such as science and mathematics) which hitherto may have been considered preserves for men. Adding to why female athletes may be doing well academically compared to male athletes, Veliz and Shakib (2014) [5], argued that participating in sports, which is considered a male-dominated domain, teaches female athletes not only skills and values necessary for success in academics, but also provides a social environment which challenges gender stereotypes about female limitations in other primarily "masculine domains" such as mathematics and science. Veliz and Shakib stated further that sports participation provided a unique cultural environment for female athletes to challenge

stereotypical assumptions about femininity such as men being innately better at mathematics than women.

From an entirely different perspective, researchers such as Coakley (2008) ^[55], Harrison and Lawrence (2004) ^[56], and Rishe (2003) ^[57], have also attempted to explain why female athletes are out-performing male athletes in academics. These researchers argue that the significant differences in academic performance between male and female athletes could be due to the stringent demands made on male athletes to participate in very competitive sports and that the intensity of the male athletes' competitions usually leaves them with little time to devote to their studies. Female athletes on the other hand have less intense demands on them competition wise, and therefore are able to spend enough time on their studies to achieve higher measures of academic performance than their male counterparts. The male-dominated nature of sports, characterized by spatial and physical abilities, has also been used to explain why males do better academically in courses or subjects such as mathematics, science, technical skills and engineering. Spatial abilities have often been taken as a basic reason why boys choose such areas of study as mathematics, and girls move into english and humanities. According to Quaiser-Pohl and Lehmann (2002) ^[58], sports have often been found to be another area where male spatial ability self-beliefs improve outcomes and as such it therefore comes as no surprise that male athletes who through sports are most likely to develop their spatial and physical abilities more than female athletes are most likely to perform better in mathematics, science, technical skills and engineering, which are subjects involving spatial and physical abilities.

Literature reviewed relating to gender effects on academic performance of Junior High School students in Ghana shows only a handful of research in that direction (Ampofo & Osei-Owusu, 2015; Olaewe, 2015; Oppong, 2013; Asante, 2010; Nyame, 2010; Anamuah-Mensah, 1995) ^[12, 13, 16, 14, 10, 15]. These few studies conducted addressed gender effects on academic performance outside a sports context. There are also generally limited studies on academic performance of student-athletes at all levels of education in Ghana. Adzaku (2012) ^[59], and Arthur-Norman (2010) ^[60], studied the relationship between sports participation and academic performance at the Senior High School level. From the review of literature on Ghana, it appears the only research relating to gender differences in academic performance among athletes was the one carried out by Apaak and Sarpong (2015) ^[46], among university student-athletes. The current study therefore sought to further interrogate this issue of gender and academic performance of student-athletes at an entirely different level of education (Junior High School) in Ghana. To do this, the Komenda, Edina, Eguafo, Abirim (K.E.E.A.) Municipality in the Central Region was selected as a case study. The K.E.E.A. Municipal Area was chosen as a case study for this research because it was the only Municipal Area in the region, out of the 20 Metropolitan, Municipal and District Assemblies (Ministry of Local Government and Rural Development, 2015), that was able to successfully organize its Annual Inter-School Games and Athletics Sports Competitions at the circuit level as scheduled during the 2013/2014 academic year. An indication that the K.E.E.A. Municipality is the most consistent municipality in the Central Region when it comes to organization of sports competitions for junior high school athletes.

1.2 Research Question

1. What percentage of male and female athletes passed or

failed in each core subject during the 2014 J.H.S. 3 Mock Examination?

1.3 Research Hypothesis

1. There will be no significant difference in academic performance between male and female athletes in English in the 2014 Mock Examination.
2. There will be no significant difference in academic performance between male and female athletes in Mathematics in the 2014 Mock Examination.
3. There will be no significant difference in academic performance between male and female athletes in Science in the 2014 Mock Examination.
4. There will be no significant difference in academic performance between male and female athletes in Social Studies in the 2014 Mock Examination.

2. Methods

2.1 Background

Sports competitions in Ghanaian Junior High Schools are in two forms, those that are organised within individual schools and those that are organized externally by the Ghana Education Service, through the Schools and Colleges Sports Federation, where schools, districts and regions compete against each other at various levels (inter-schools, inter-districts and inter-regionals) in various disciplines. The competitions organized internally by the schools are used to select school athletes to represent their schools externally in competitions. During competitions such as inter-schools, athletes are selected to form district or regional teams to represent their respective districts or regions at higher level competitions such as inter-district or inter-regional basic schools sports competitions. Inter-schools sports competitions as well as inter-district and inter-regional sports competitions are organized yearly or biennially with venues rotating from one school, district or region to the other. For all the competitions athletes are usually camped at a particular school to promote supervision of training. The time allocation for preparation defers for the various stages of competition (Adzaku, 2012) ^[59]. At the Junior High School level in Ghana, students participate in soccer, volleyball, handball, netball, table tennis, track and field athletics and cross country race at the various levels of competition.

2.2 Research Design

A comparative descriptive research design was utilized in this study to compare the academic performance records of male and female athletes.

2.3 Participants

The research population comprised all 594 form three students from the 88 Junior High Schools (63 public and 25 private schools) that participated in the 2014 Inter-Schools Games and Athletics Competition in the K.E.E.A. Municipal Area. Random sampling technique was used to select 297 athletes (50% of the population), comprising 168 males and 129 females as the sample.

2.4 Measurement of Academic Performance and Athletic Status

In this study, academic performance was measured as raw examination scores obtained by the 297 selected athletes during the 2014 J.H.S. 3 Mock Examination in core subjects (English, Mathematics, Science and Social Studies). The focus of the study was to compare raw examination scores in core

subjects, therefore the Mock Examination was selected because results were obtainable as raw scores and most importantly because it is also one of the assessment tools used by the Ghana Education Service in measuring the academic performance of J.H.S. students. The J.H.S 3 Mock Examination has also been reported to correlate well with other examinations such as the Basic Education Certificate Examination (Okyere, 2013) [61]. An athlete was also defined as any form three student who participated in the 2014 Inter-school Games and Athletics Sports Competition at circuit level in the K.E.E.A. Municipality.

2.5 Data Collection

Data on athletes were obtained from the Sports Unit of K.E.E.A. Municipal Directorate of the Ghana Education Service. The secondary data, comprising raw examination marks scored by the 297 selected athletes in English, Mathematics, Science and Social Studies during the 2014 J.H.S. 3 Mock examination were collected from the

examinations officer at the same Municipal Directorate, as measures of academic performance. All data were collected by the researcher.

2.6 Data Analysis

Percentages were used to answer the single research question raised, while the t-test for two independent samples was used to test the four research hypotheses formulated using a significance level of .05 alpha.

3. Results and Findings

Out of the 297 selected athletes 168, representing 56.6% were males whilst 129, representing 43.4% were females. This reveals that majority of the selected sample were males.

Research Question One: What percentage of male and female athletes passed or failed in each of the core subjects in the 2014 J.H.S. 3 Super Mock Examination.

Table 1: Percentage of Male and Female Athletes Who Passed or Failed in Core Subjects

	English		Maths		Science		Soc. Stud.		
	Pass	Freq	%	Freq.	%	Freq.	%	Freq.	%
Males		78	46.4	64	38.1	55	32.7	107	60.7*
	Fail	90	53.6	104	61.9	113	67.3	66	39.3
Total		168	100.0	168	100.0	168	100.0	297	100.0
Females	Pass	54	41.9	32	24.8	31	24.0	76	58.9*
	Fail	75	58.1	97	75.2	98	76.0	53	41.1
Total		129	100.0	129	100.0	129	100.0	100.	00

Pass≥50 marks*; Fail<50 marks

Table 1 shows that for male athletes, 46.4% passed and 53.6% failed in English, 38.1% passed and 61.9% failed in Mathematics, 32.7% passed and 67.3% failed in Science, whilst 60.7% passed and 39.3% failed in Social Studies. For female athletes, 41.9% passed and 58.1% failed in English, 24.8% passed and 75.2% failed in Mathematics, 24.0% passed and 76.0% failed in Science, whilst 58.9% passed and 41.1% failed in Social Studies. Results from Table 1 revealed that more than 50% of male and female athletes failed in English, Mathematics and Science, with more than 50% of the two groups passing in only Social Studies. This means that the performance of both male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in core subjects was generally poor. The results revealed further that even though the two groups generally performed poorly, the percentage of males (english-46.4%, mathematics-38.1%, science-32.7%, social studies-60.7%) who passed in each core was better compared to that of females (english-41.9%, mathematics-24.8%, science-24.0%, social studies-58.9%).

Hypothesis One: There will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in English.

Table 2: Independent Sample t-test Showing Mean Score of Male and Female Athletes in English

Gender	Mean	SD	N	t	df	Sig (2-tailed)
Male	48.17	16.74	168	.122	295	.903
Female	47.94	14.93	129			

p<.05.

Table 2 shows that male athletes had a mean score of 48.17

(SD = 16.74, N = 168), whilst female athletes had a mean score of 47.94 (SD = 14.93, N = 129) in English. The mean scores for both male and female athletes reveal that both groups on average obtained less than 50 marks in English during the examination, meaning that performance in terms of English for both male and female athletes could be described as below average in the examination. The mean scores also show that male athletes scored slightly higher than female athletes in English, however a look at the standard deviation (SD) for the two groups reveals that scores in English for female athletes were much closer to the mean than scores of male athletes. Results from Table 2 also revealed that although male athletes scored slightly higher than female athletes in English, the t-test obtained was not significant (t = .122, df = 295, p = .903). That is comparison of mean scores in English for male athletes (Mean = 48.17, SD = 16.74, N = 168) and female athletes (Mean = 47.94, SD = 14.93, N = 129) indicated no significant differences between the two groups, thus the Hypothesis that stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in English, was retained. This means that performance in English was similar for all athletes during the 2014 J.H.S. 3 Super Mock Examination irrespective of whether some were male or female. In other words gender had no significant effect on the academic performance of athletes in English.

Hypothesis Two: There will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Mathematics.

Table 3: Independent Sample t-test Showing Mean Score of Male and Female Athletes in Mathematics

Gender	Mean	SD	N	t	df	Sig (2-tailed)
Male	44.28	13.46	168	2.887	295	.004*
Female	39.82	12.84	129			

$p < .05$; (*significant)

Table 3 revealed that male athletes had a mean score of 44.28 (SD = 13.46, N = 168), whilst female athletes had a mean score of 39.82 (SD = 12.84, N = 129) in Mathematics. The mean scores for both male and female athletes show that both groups on average obtained less than 50 marks in Mathematics during the examination, meaning that performance in terms of Mathematics for both athletes and non-athletes could be described as below average in the examination. The mean scores also show that male athletes scored higher than female athletes in Mathematics, however a look at the standard deviation (SD) for the two groups reveals that more female athletes (SD = 12.84) scored closer to their mean than male athletes (SD = 13.46). Results from Table 3 further indicated that the t-test obtained was significant ($t = 2.887$, $df = 295$, $p = .004$). That is comparison of mean scores in Mathematics for male athletes (Mean = 44.28, SD = 13.46, N = 168) and female athletes (Mean = 39.82, SD = 12.84, N = 129) showed a significant differences between the two groups, thus the Hypothesis that stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Mathematics, was not retained. This means that there were significant gender differences in Mathematics performance during the 2014 J.H.S.3 Super Mock Examination, with males outperforming females. In other words male athletes performed better than female athletes in mathematics.

Hypothesis Three: There will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Science.

Table 4: Independent Sample t-test Showing Mean Score of Male and Female Athletes in Science

Gender	Mean	SD	N	t	df	Sig (2-tailed)
Male	41.30	15.04	168	1.007	295	.314
Female	39.58	14.04	129			

$p < .05$

Table 4 shows that male athletes had a mean score of 41.30 (SD = 15.04, N = 168), whilst female athletes had a mean score of 39.58 (SD = 14.04, N = 129) in Science. The mean scores for both male and female athletes reveal that both groups on average obtained less than 50 marks in Science during the examination, meaning that performance in terms of Science for both male and female athletes could be described as below average in the examination. Mean scores in Science for the two groups are close, however a look at the standard deviation (SD) for the two groups reveals that scores in Science for female athletes (SD = 14.04) were much similar than scores of male athletes (SD = 15.04). In other words, more female athletes scored closer to their mean than male athletes. Results from Table 4 also showed that the t-test obtained was not significant ($t = 1.007$, $df = 295$, $p = .314$). That is comparison of mean scores in Science for male athletes (Mean = 41.30, SD = 15.04, N = 168) and female athletes (Mean = 39.58, SD = 14.04, N = 129) revealed no significant differences between the two groups, thus the Hypothesis that stated that there will be no significant difference in academic

performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Science, was retained. This means that athletes' performance in Science was also very similar during the 2014 J.H.S. 3 Super Mock Examination irrespective of whether some were male or female. In other words there were no significant gender effects on athletes' performance in Science.

Hypothesis Four: There will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Social Studies.

Table 5: Independent Sample t-test Showing Mean Score of Male and Female Athletes in Social Studies

Gender	Mean	SD	N	t	df	Sig (2-tailed)
Male	53.29	15.44	168	.504	295	.615
Female	52.43	13.36	129			

$p < .05$

Table 5 shows that male athletes had a mean score of 53.29 (SD = 15.44, N = 168), whilst female athletes had a mean score of 52.43 (SD = 13.36, N = 129) in Social Studies. The mean scores for both male and female athletes reveal that both groups on average obtained more than 50 marks in Social Studies during the examination, meaning that it was only in Social Studies that both male and female athletes performed above average during the examination. Mean scores in Social Studies for the two groups were close, however a look at the standard deviation (SD) shows a disparity in how the scores for the two groups are spread around their respective means. This reveals that scores in Social Studies for female athletes (SD = 13.36) were much similar than scores of male athletes (SD = 15.44). In other words, more female athletes scored closer to their mean than male athletes in Social Studies. Table 5 also revealed that the t-test obtained was not significant ($t = .504$, $df = 295$, $p = .615$). That is comparison of mean scores in Social Studies for male athletes (Mean = 53.29, SD = 15.44, N = 168) and female athletes (Mean = 52.43, SD = 13.36, N = 129) showed no significant differences between the two groups, thus the Hypothesis that stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Social Studies was also retained. This means that performance in Social Studies was also the same for all athletes during the 2014 J.H.S. 3 Super Mock Examination irrespective of whether some were male or female. In other words athletes' gender had no significant effect on their academic performance in Social Studies.

Looking at the number of male and female athletes who obtained 50 marks and above (passed) in each core subject, the findings revealed that performance was generally poor for both genders. With the exception of Social Studies where more than 50% of both groups passed, majority of male and female athletes failed in English, Mathematics and Science. Mean scores for both groups in each of the core subjects also revealed a similar trend of poor performance. Mean scores in English, Mathematics and Science were below 50 marks. Again it was only in Social Studies that mean scores for both male and female groups were above 50 marks. Can this trend mean athletes in general did not perform well, compared to non-athletes during the Mock Examination in the K.E.E.A. Municipality? Further research involving non-athletes will be required to ascertain that, as the focus of this current study was only on athletes. The findings revealed further that though the two groups generally performed poorly, the percentage of

males (english – 46.4%, mathematics – 38.1%, science – 32.7%, social studies – 60.7%) who passed in each core was higher compared to that of females (english – 41.9%, mathematics – 24.8%, science – 24.0%, social studies – 58.9). Similarly mean scores obtained in each core subject by male athletes (english – 48.17, mathematics – 44.28, science – 41.30, social studies – 53.29) were better compared to mean scores of female athletes (english – 47.94, mathematics – 39.82, science – 39.58, social studies – 52.43).

Hypothesis 1 which stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in English, was retained, implying that although mean scores of male athletes were slightly higher than mean scores of female athletes, the differences in performance were not significant. In other words gender had no significant effect on the academic performance of athletes in English. Similar findings have been reported by Shriver (2008) ^[31] and Fleenor (1997) ^[32] who found out that there were no significant gender differences among high school athletes in english reading and language studies. Although their study did not involve athletes, Ampofo and Osei-Owusu (2015) ^[12] also reported no significant difference in performance between male and female high school students in english. Findings from studies that showed female athletes performed better in english, reading and verbal reasoning compared to male athletes (Lumpkin & Achen, 2014 ^[18]; Lumpkin & Favor, 2012 ^[17]; Shachaf, Katz & Shoval, 2013 ^[26]) appear to contradict what was found by this study.

Hypothesis 2 stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Mathematics. This was not retained, meaning that there were significant gender differences in Mathematics performance during the 2014 J.H.S.3 Super Mock Examination, with males outperforming females. In other words, although performance for both genders were below average, male athletes still scored significantly better than female athletes in mathematics. These findings mirror exactly findings by Lumpkin and Achen (2014) ^[18], Lumpkin and Favor (2012) ^[17], which showed that male athletes outperformed female athletes in ACT mathematics. Outside a sports context, similar findings have been reported by Olaewe (2015) ^[13], and Asante (2010) ^[14], who concluded that there were significant gender differences in academic performance in mathematics among High School students, with males performing better than females. Studies by Shachaf, Katz and Shoval (2013) ^[26], Hanson and Kraus (1998 ; 1999) ^[28, 29], which revealed that female athletes attained significantly higher scores in numeracy and mathematics when compared with that of male athletes, are contrarily to findings reported by the current study. Also Ampofo and Osei-Owusu (2015) ^[12], who reported no statistically significant association between a students' sex and his/her academic performance in mathematics among high school students in general, oppose the position of this study which found a statistically significant difference in mathematics performance between male and female high school athletes, with males performing better than females.

Hypothesis 3 stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Science. This hypothesis was retained, meaning that there were no statistically significant differences between male and female athletes' performance in Science. In other words there were no significant gender effects on athletes' performance in Science.

Shriver's (2008) ^[31] findings which showed that students' gender and athletic participation did not significantly affect students' performance on Tennessee Comprehensive Assessment Program Achievement Test (TCAP) subtests in science agree with findings of this study, whilst findings that showed significant differences in academic performance in science between male and female athletes (Lumpkin & Achen, 2014; Shachaf, Katz & Shoval, 2013; Lumpkin & Favor, 2012[]]; Schneider, 2010; Gorman, 2010; Pearson *et al.*, 2009; Hanson & Kraus, 1998, 1999) ^[18, 26, 17, 1, 21, 30, 28, 29] are contradictory to what was found by this study. The position of Anamuah-Mensah (1995) ^[15], that generally boys performed far better than girls in all science subjects in Ghana at the Secondary School level, although outside a sports setting, seems to oppose the findings of this study.

Hypothesis 4 which stated that there will be no significant difference in academic performance between male and female athletes in the 2014 J.H.S. 3 Super Mock Examination in Social Studies was also retained. This means that whether some athletes were male or female, their performance in social studies were not statistically different. In other words athletes' gender had no significant effect on their academic performance in Social Studies. Again, findings from Shriver's (2008) ^[31] study that students' gender and athletic participation did not significantly affect performance on Tennessee Comprehensive Assessment Program Achievement Test (TCAP) subtests in social studies fit perfectly with findings of this study. Oppong (2013) ^[16], concluded from a study which involved students generally that there were significant differences in academic performance between male and female High School students in History (an aspect of social studies) examinations, with female students doing better than their male counterparts, a position which differs from the non significant difference in academic performance observed by this study in social studies among male and female athletes.

This study revealed that, although the performance of both male and female athletes were generally poor in the four core subjects measured, a higher percentage of male athlete passed in each subject, compared to female athletes. Also the findings showed that male athletes obtained higher mean scores in each subject than female athletes. In testing the hypotheses, findings revealed that the difference in academic performance between male and female athletes in three (english, science and social studies) out of the four core subjects at the junior high school level were not statistically significant. The findings however showed that the difference in academic performance between male and female athletes in mathematics at the Junior High School level was statistically significant, with male athletes performing better than females.

The bulk of studies on gender differences in academic performance among athletes at the various levels of education show that females are outperforming males in most areas (Lumpkin & Achen, 2014; Georgakis, Wilson & Ferguson, 2014; Shachaf, Katz & Shoval, 2013; Amos, 2013; Institute for Diversity and Ethics in Sports (TIDES), University of Central Florida, 2013; Lumpkin & Favor, 2012; Gorman, 2010; Dilley-Knoles, Burnett & Peak, 2010; Milton & Gottschalk, 2010; Scott *et al.*, 2008; Finley & Fountain, 2007; Crosnoe, 2002; Gohl, 2001; Stegman & Stephens, 2000; Hanson & Kraus, 1998; 1999) ^[18, 44, 26, 40, 17, 21, 36, 37, 38, 41, 23, 42, 25, 28, 29]. Infact, sports participation is seen as a factor that has enabled female athletes out-perform male athletes in mathematics and science, subjects which are thought of as predominately "masculine". Schneider (2010) ^[1] indicated that participation in high school sports for females has an

overwhelmingly positive correlation to academic performance in science, which traditionally was thought of as a male-dominated field, whilst findings from studies by Hanson and Kraus (1998; 1999)^[28, 29] and Pearson *et al.* (2009)^[30] further revealed that participation in school sports had positive influence on academic performance and attitude of female athletes in mathematics and science when compared with that of male athletes. Findings of this study however appear to dispute these claims, as males dominated females, particularly in mathematics, where male athletes significantly performed better than female athletes. Even in the so-called “feminine” subjects such as English and social studies (Correll, 2004; Quaiser-Pohl & Lehrmann, 2002; Sadker & Sadker, 1994)^[51, 58, 52], male athletes still obtained slightly higher mean scores compared to female athletes, although differences were not statistically significant. In discussing the findings of this study further, it can be speculated that, perhaps the male-dominated nature of sports, which is characterized by spatial and physical abilities explains why male athletes performed better than female athletes in mathematics (Quaiser-Pohl & Lehrmann, 2002). Another plausible explanation for the male dominance, particularly in mathematics as observed in this study, could be that male students’ grades benefited more when they participated in school sports than female students (Schneider, 2010)^[1].

4. Conclusions

This study therefore concluded that although performance was generally poor for both male and female athletes in the 2014 J.H.S. 3 Mock Examination, performance of male athletes in mathematics was significantly better when compared to female athletes in the K.E.E.A. Municipality of the Central Region of Ghana, an indication that the effects of sports participation on academic performance may be more detrimental on females than males. It was further concluded that there were no significant gender differences in the academic performance of athletes in English, science and social studies in the municipality.

5. Recommendations

Based on the findings of the study and conclusions arrived at, it was recommended that: i) a comparative study involving athletes and non-athletes should be conducted to investigate whether participation in sports accounted for the generally poor academic performance of athletes observed in this study ii) the authorities in charge of school sports (Ghana Education Service) should re-evaluate the participation of girls in sports activities within the K.E.E.A. municipality to ensure that female athletes do not suffer academically.

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