

Research Article

# Prevailing Injuries among Senior High Students-Athletes in the Akuapem Municipality

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**Abstract:** Sports injuries among student-athletes in high schools have become prevalent in most developing countries such as Ghana. In identifying the prevailing injuries among senior high student-athletes in the Akuapem municipality, a descriptive cross-sectional survey design was used. A total of 610 student-athletes were purposely selected for the study to respond to the DEMASS inventory questionnaire regarding their opinion on the prevailing sports injuries. The results indicated that wounds (67.8%), knee injury (65.1%), muscle cramps (56.1%), and thigh injury (55.1%) were prevailing in S.H.S tournament than sprain (37.8%), strain (32.0%), dislocation (30.0%), fracture (31.3%), nose bleeding (31.3%) and groin injuries (23.1%). Participants who played more games professed that the number of games played contributed to sustaining sprain, strain, dislocation, and nose bleeding. Further studies should be carried out at other places and districts to uncover more about injuries sustained during high school sports competitions to minimize their occurrence.

**Keywords:** Sports injuries; Prevailing; Athletes, and Students

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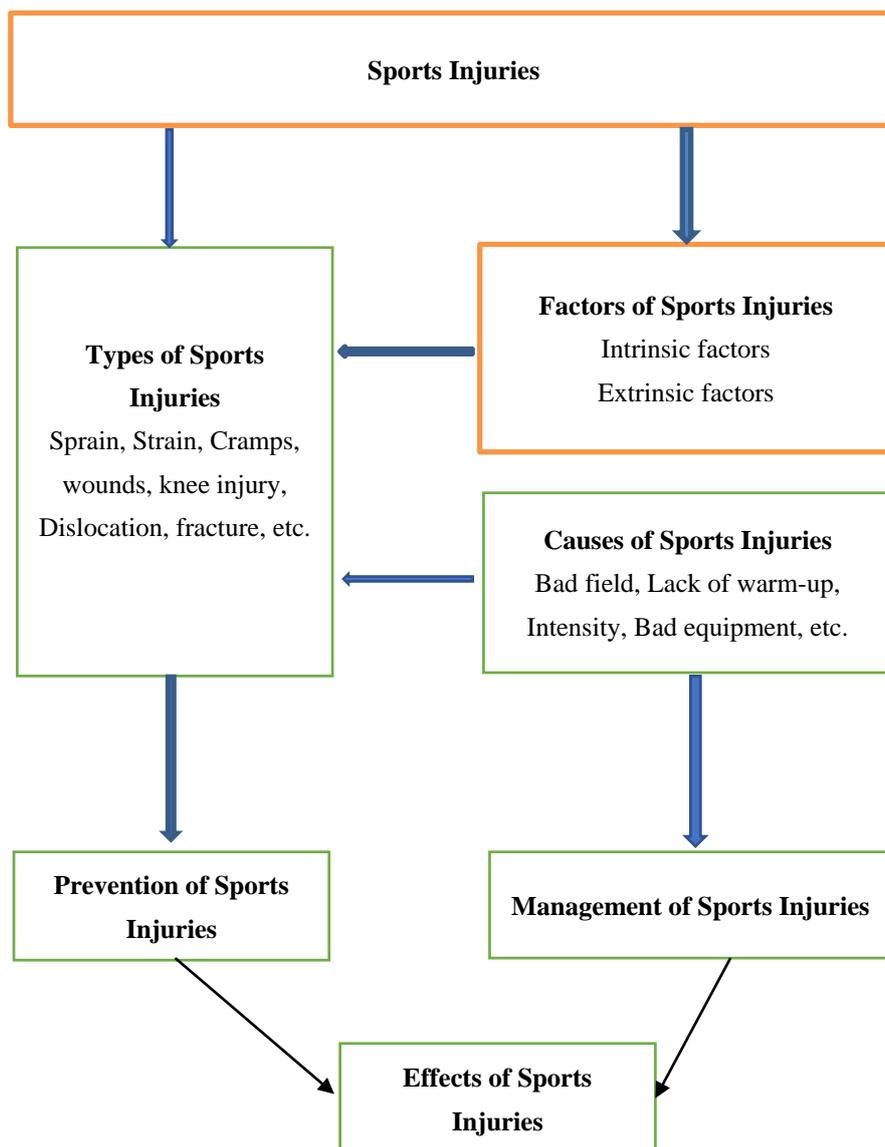
## 1. Introduction

Participation in sports is often associated with the risk of injuries that may lead to permanent disability, while other injuries such as hamstrings, strains, or anterior cruciate ligament damage may lead to career-ending, and post-career disability [1]. Sports injuries are a significant cause of concern for athletes, sports enthusiasts, society, and parents [2]. Developing treatment methods for injuries remains an important goal rather than preventing injuries since sports and injuries are inseparable. [3] described the causes of sports injuries as improper equipment, fatigue, poor warm-up, and unfamiliar activities. Sports like football, volleyball, and basketball are more prone to injuries due to the nature, intensity, and energy demands involved in participating than others [4].

Sports injuries can be classified by types which include acute and chronic injuries [5]. Acute injuries occur due to sudden trauma to the tissue, with most of the symptoms presenting themselves almost immediately, while chronic or overuse are caused by repeated use of muscle groups or parts as a result of poor techniques and structural abnormalities [6]. Student-athletes sustain different types and degrees of injuries during inter-school competitions in the Akuapem municipality and this is increasingly discouraging them from participating and developing their talent. Several analyses and measures such as ensuring proper and effective warm-ups before games and proper officiating for games have been ensured but have not been able to curb the problem of injury occurrences. These injuries sustained brought about several effects such as loss of academic learning time and deformity in the student-athletes. Identifying the trend and

the types of injuries among senior students motivated the researchers to explore the prevailing injuries among senior high school student-athletes in the Akuapem Municipality of the Eastern Region, Ghana. This study answered questions such as what types of sports injuries do athletes sustain in Senior High school competitions? And what are the differences in the number of events on the type of sports injury sustained in Senior High School competition?

## 2. Literature Review



**Figure 1.** Conceptual Framework

Several sports injuries hinder the performance of athletes during training and competition. Kinds of literature were reviewed with reference to the prevailing sports injuries and their effects on the athlete among senior high students.

A study by [7], on the analysis of sports injuries in training and competition for handball players, identified the most popular incidence of injury in competition (37.8%) and training (45.8%) was a sprain and it was determined that foot and ankle were the most commonly injured body parts. The study concluded that the body parts most injured in handball are the foot and ankle, knee, calf-thigh, shoulder and hand, and wrist regions

regarding the strengthening of the muscles of these body parts to minimize injuries such as tears, strain, sprains, ligament ruptures and tendonitis due to overuse. The study was carried out on only handball and also came out with sprain as the only injury type.

[8] carried out a study on Injury surveillance during a national female youth football tournament in Kenya using a survey design. The results showed that a total of 252 injuries were reported from 106 matches. U13 players had an increased risk of injury compared to U16 players and O16 players. The study further revealed a prevalence rate of 73%, 11%, and 10% for lower limb, contusion, and ankle injuries respectively, resulting mainly 79% from player contact. Only female footballers were used as participants in the study.

[9] carried out a longitudinal study on the injury recurrence in high school from 2005 to 2016 and recorded. Overall, 78,005 injuries were sustained during 40,195,806 AEs, at a rate of 19.41 per 10,000 AEs. Of these, 69,821 (89.5%) were new injuries, and 8184 (10.5%) were recurrent. The ankle was the most commonly injured body part among recurrent injuries, while the head/face was the most common body part that sustained new injuries. Ligament sprains were more often recurrent, while concussions were more commonly diagnosed as new, although concussions represented 16.7% of recurrent injuries with a greater proportion of the recurrent injuries resulting in surgery. Although only 10.5% of all injuries were recurrent, they more frequently resulted in missing over 3 weeks of playing time and were more often managed surgically when compared with new injuries. This study identified similar prevailing injuries, longitudinal survey design was employed.

[10] conducted a study on musculoskeletal injuries in young handball players and the results showed that most of the athletes approximately 15 years old had a normal body mass index classification and worked out an average of 3 times a week and their weekly workload was approximately 8 hours and 30 minutes. The main injuries found were sprains and tendinopathies, with the ankle and knee being the most affected regions. Only the sports practice of over 6 years showed a statistical relationship with previous injuries ( $p=0.032$ ). The prevalence of injuries in the last 12 months in this population was 53.60%. Although the study utilized a survey design and was carried out on young players, it concentrated on handball.

### 3. Method

A descriptive cross-sectional survey design with the use of questionnaires was used to collect data. 1800 student-athletes of which 1000 (56%) were girls with the remaining 800 (44%) being boys constituted the population of the study. A purposive sampling technique was used to select 610 student-athletes who experienced sports injuries during the 2018/2019 inter-school competition in the Akuapem municipality. Out of the total, 220 (36%) were boys and 390 (63%) were girls. The (DEMASS) inventory questionnaire instrument with validate with a reliability coefficient of .7 was used to collect data. The reliability of the instrument was calculated with Cronbach's Alpha from 50 equivalent sampled student-athletes. The questionnaire was made of three sections. Section A collected data on the demographic information of the participants and was made up of five items. Section B responded to ten-item questions on the types of injuries sustained and it was measured on an ordinal scale. Section C answered sixteen-item questions on the factors and causes of sports injuries and was measured on a four-point Likert scale from strongly agree to strongly disagree. There were four items on each of the physiological, biological, psychological, and sociocultural factors of sports injuries. Descriptive statistic was analyzed on the types of sports injuries whilst inferential statistics of Kruskal-Wallis was calculated to access the types of sports injuries according to the number of events performed by student-athletes.

#### 4. Results

**Table 1. Gender of participant**

Gender	Frequency	Percent
Male	220	36.1
Female	390	63.9
<b>Total</b>	<b>610</b>	<b>100.0</b>

*Source: Field data (2019).*

Data from [Table 1](#) showed that out of the total, 220 (36.1%) were boys and 390 (63.9%) were girls.

**Table 2. Number of games played by participants**

	Frequency	Percent
1	218	35.7
2	221	36.2
3	104	17.0
4	48	7.9
5	19	3.1
<b>Total</b>	<b>610</b>	<b>100.0</b>

*Source: Field data (2019).*

Results from [Table 2](#) indicated 218 (35.7%) participated in only one game, 221 (36.3%) in two games, 104 (17.0%) in three games, 48 (8.9%) in four games, and only 19 (3.1%) in five games.

**Table 3. Data on sports injuries**

Sports Injury Type	Rank (%)
Sprain	
Never, Rarely	62.2%
Sometimes, Often, Always	37.8%
Strain	
Never, Rarely	68.0%
Sometimes, Often, Always	32.0%
Dislocation	
Never, Rarely	70.0%
Sometimes, Often, Always	30.0%
Fracture	
Never, Rarely	68.7%
Sometimes, Often, Always	31.3%
Nose Bleeding	
Never, Rarely	74.2%
Sometimes, Often, Always	25.8%
Muscle Cramps	

Never, Rarely	43.9%
Sometimes, Often, Always	56.1%
Wounds	
Never, Rarely	32.2%
Sometimes, Often, Always	67.8%
Groin	
Never, Rarely	76.9%
Sometimes, Often, Always	23.1%
Thigh Injury	
Never, Rarely	44.9%
Sometimes, Often, Always	55.1%
Knee Injury	
Never, Rarely	34.9%
Sometimes, Often, Always	65.1%

*Source: Field data (2019)*

In analyzing the frequencies of the types of sports injuries sustained in S.H.S competition from Table 3, responses of “never” and “rarely” were added and compared to responses of “sometimes”, “often”, and “always”. The results showed that wounds (67.8%), knee injury (65.1%), muscle cramps (56.1%), and thigh injury (55.1%) were prevailing in S.H.S tournament than sprain (37.8%), strain (32.0%), dislocation (30.0%), fracture (31.3%), nose bleeding (31.3%) and groin injuries (23.1%). Prevailing injuries had higher values and percentages in their ranking as compared to non-prevailing injuries which ranked lower. The results indicated wounds, knee injuries, muscle cramps, and thigh injuries as the common and prevailing injuries among student athletes in the Akuapem municipality.

**Table 4. Difference in the number of games played and type of injuries sustained**

Injury Type	No. of Games Played	Percentage	Mean Rank
Sprain	1	15.7%	281.37
	2	16.2%	297.54
	3	18.3%	316.38
	4	21.7%	367.59
	5	27.8%	458.53
	<b>Total</b>	<b>100%</b>	
Strain	1	14.8%	270.21
	2	17.6%	303.11
	3	19.4%	339.56
	4	21.3%	350.51
	5	26.9%	438.05
	<b>Total</b>	<b>100%</b>	
Dislocation	1	18.2%	295.20
	2	17.2%	290.65
	3	20.2%	328.26
	4	21.2%	345.20
	5	23.2%	371.55
	<b>Total</b>	<b>100</b>	
Fracture	1	18.6%	295.42
	2	19.6%	299.75

	3	20.6%	316.69
	4	23.7%	359.55
	5	17.5%	290.32
	<b>Total</b>	<b>100%</b>	
Nose Bleeding	1	17%	286.33
	2	17%	299.69
	3	19.2%	320.57
	4	23.7%	352.03
	5	25.5%	393.00
	<b>Total</b>	<b>100%</b>	
Muscle Cramps	1	20.1%	311.22
	2	19.4%	296.93
	3	19.4%	302.75
	4	20.2%	313.17
	5	20.9%	335.29
	<b>Total</b>	<b>100%</b>	
Wound	1	20%	315.13
	2	18.7%	296.01
	3	18%	279.22
	4	20.7%	339.21
	5	22.6%	364.03
	<b>Total</b>	<b>100%</b>	
Groin	1	18.2%	293.12
	2	19.3%	307.71
	3	19.3%	305.46
	4	22.7%	339.82
	5	20.5%	335.29
	<b>Total</b>	<b>100%</b>	
Thigh Injury	1	19.7%	293.73
	2	21.3%	318.68
	3	21.3%	314.53
	4	18%	278.94
	5	19.7%	304.87
	<b>Total</b>	<b>100%</b>	
Knee Injury	1	18.6%	293.63
	2	19.3%	301.18
	3	20.7%	325.64
	4	19.3%	308.56
	5	22.1%	374.03
	<b>Total</b>	<b>100%</b>	

Source: Field data (2019).

The analysis from Table 4 indicates that sprain, strain, dislocation, and nose bleeding had a statistically significant difference in the number of games played and the types of injuries sustained with all their  $p$  values less than .05 ( $p < .05$ ) as compared to fracture, muscle cramps, wound, groin, thigh and knee injuries which have  $p$  values greater than .05 ( $p > .05$ ). Participants who played more games alleged that the number of games played contributed to sustaining sprain, strain, dislocation, and nose bleeding injuries. However, no difference in the opinions of participants who played more games and those who play fewer games on the occurrence of fractures, muscle cramps, wounds, groin, thigh, and knee injuries.

## 5. Discussion

### 5.1. Types of Sports Injuries

Student-athletes sustain different types of sports injuries before, during, and after competitions. The most prevailing sports injuries that sustained these student-athletes in the S.H.S competition in the Akuapem municipality were wounds, thigh injuries, muscle cramps, and knee injuries. The occurrence of the injuries identified from the results were 67.8%, 65.1%, 56.1%, and 55.1% respectively indicating higher frequency during the S.H.S tournament in the Akuapem Municipality. Other sports injuries like sprain (37.8%), strain (32.0%), dislocation (30.0%), fracture (31.3%), nose bleeding (31.3%) and groin injuries (23.1%) occurred less frequently. Several reasons were attributed to the injury occurrences of student-athletes in the Akuapem municipality. Student-athletes sustain different types of injuries during inter-school competitions due to playing series matches in a day. Organizers of these competitions with their program lineup compelled student-athletes to play several matches in a few days without proper time to rest and recover. By this, tiredness and muscle stress on the part of athletes increase their tendency of sustaining injuries. Also, unfriendly weather conditions accounted for the frequent occurrence of these injuries. These competitions are normally played in the scorching sun and even in the rain sometimes and this situation exposed student-athletes to sustaining injury. Again, inadequate preparation and training contributed to injury occurrence among student-athletes. Interactions with physical education teachers indicated that student-athletes were not taken through proper training and conditioning to prepare them for such multi-games in the competition. Another reason that contributed to the high frequencies of these injuries was that school games are often played on bad pitches and courts. Furthermore, the use of inappropriate equipment like footwear contributed greatly to the frequency of these injuries.

Regarding the types of injuries, the outcome of this study confirms the result of a similar study by [11] who identified ankle, knee, and thigh injuries as the dominant injuries with a higher percentage value of 56%, 58%, and 29% respectively. [12] studied the influence of risk factors in the national football league and recorded the same outcome regarding the types of injuries sustained. Contrary, [13], [10], and [8] in their study identified ankle, lower back, knee, and thigh injuries as the common sports injuries in their studies. To conclude, wounds, thigh injuries, muscle cramps, and knee injuries were identified as common and the most prevailing injuries among student-athletes in the Akuapem Municipality.

### 5.2. Differences in the number of events on the type of injury sustained

It is perceived that the types of sports or events played would contribute to the chances of getting sports injuries. This study, however, has exhibited that not only the type of sports and the events that influence sports injury but also the number of events or games played by an athlete in the particular competition had a direct influence on not just injuries but the specific type of injury the athletes is likely to sustain. The results of this study indicated clearly, the impact and influence of participating in several games on sports injuries. The study indicated that those who participate in more events differ in opinion from those who participate in single events on types of injury, and therefore sustained sprain, strain, dislocation, and nose bleeding which was identified among student-athletes who participated in more than one event. The outcome of this study showed clearly that those who participated in more events shared the same opinion on the occurrence of fracture, muscle cramps, wound, groin, thigh injury, and knee injury as injuries that are not based on the number of events by athletes. These injuries sustained were mainly attributed to physiological factors according to the findings of the study. These sports injury types were common as a result of student-athletes participating in several contact games during such competition. These common injury types were more

prevailing concerning several games played without rest and recovery on the part of athletes. Student-athletes sustained different types of injuries due to the tense and competitive nature of the games played by student-athletes during such competitions. Most of the games played in such competitions are contact and vigorous games in nature, hence exposing them to different types of injuries. It was also perceived that these injuries occurred as a result of the bad playing area. These series of games are entirely played in these bad playing areas due to the lack of good sports facilities in secondary schools in the municipality and this situation increased their risk of sustaining different types of injuries.

[14] in their study outlined types of sports injuries normally suffered by athletes as strain, fracture, sprain, and contusion but their study was conducted on the game of football and could not be substantiated on the number of games played. The results of this study contradicted the results of [9], [7], and [11] on professional footballers in Norway. They identified ankle injury, calf, thigh, knee, concussion, and sprain as common injuries although their study was not linked with the number of events one participates in and did not also involve different events. They showed that incidence, diagnosis, and causes of injuries differ substantially between team sports and the number of games played. In conclusion, the study indicated that several games and events played by an individual influenced the type of injury sustained.

### Conclusion

1. Wounds, knee injuries, muscle cramps, and thigh injuries were identified as the most prevailing sports injuries among senior high student-athletes.
2. Playing several games contributed to injuries like sprain, strain, dislocation, and nose bleeding injuries.

### Recommendation

1. A well-trained medical expert must always be available at such competitions to administer first aid treatment to student-athletes who sustain injury.
2. Schools and their physical education teachers should keep records of injuries sustained in training and competitions.
3. Organizers should mandate student-athletes to participate in not more than two games in such competitions.
4. Organizers of these competitions should adopt the league system of competition where games will be scheduled and played during the entire semester instead of a few days.
5. More studies must be conducted on other aspects of sports injuries and in other places to uncover more knowledge.

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