

## Knowledge and Practice Towards Injury Safety Measures Among School Trainers and Students in Sports and Military Schools at Assiut Governorate.

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### Abstract

**Background:** Injuries among school students are considered as one of the most serious health problems. **Aim of this research:** To assess knowledge and practice of the school trainers and students' knowledge regarding sports injury and its safety measures **Research design:** A descriptive design was used in this study. **Setting:** The study was conducted at four schools; which included all preparatory and secondary sports and military schools at Assiut Governorate. A convenient sample was used. The total number of school trainers and students was (656). Two tools were used (1) Self administrative questionnaire for trainers and students, (2) Trainers observation check list. **Results:** Finding revealed that more than half of the studied trainers aged more than 40 years and the majority of them were males. 51.1% of the trainers had < 20 years' experience and 33.3% of them were attended training courses about sports injury. Finding cleared that 36.3% of the studied students aged 14 to < 16 years and 79.2% of them were males. There was statistical significant difference between students' personal characteristics and their total score of knowledge. **Conclusion:** More than half of school trainers had good knowledge regarding to sports injury safety measures and most of trainers had adequate level of practices; while about half of students had poor knowledge regarding to sports injury safety measures. **Recommendation:** The study recommend establish continuous educational program for trainers and students to improve their knowledge and practices.

**Keywords:** *Sports Injury, Safety Measures, Sports & Military Schools.*

### Introduction

The schools are one of the basic institutions in the society or perhaps as sub-systems of a society, because it's an important factor for public health (Salminen et al., 2013). Injuries among school students are considered as one of the most serious health problems facing the world today because it can result in life long disability or even death; so basic life support becomes as important as preserving their life and minimizing the consequences of injuries until help is obtained (WHO, 2013).

Participation in sports also includes a risk of injury. There is a response relationship between regular exercise and health benefits. However, vigorous sports-related training can also include disadvantages and even health risks due to increasing risk of getting injured (Gledhill et al., 2011).

Injury is a growing public health problem worldwide. Deaths due to injuries account for 10% of the world's mortality. More than 90% of the world's injury deaths occur in low and middle income countries. In Egypt, injury is a hidden epidemic and its related deaths are misclassified due to lack of accurate national data. In 2007, the national injury surveillance programmer reported 20,000 deaths and more than 746,000 injuries (Mahran et al., 2016).

Sports injuries are defined as any damage to tissues as a direct result of participating in sports and exercise, which causes the frequency and intensity of

participation to be changed (Satish, 2013). Sports injuries can occur due to overtraining, lack of conditioning, and improper form or technique. Failing in warm up increases the risk of sports injuries. Bruises, strains, sprains, tears, and broken bones can result from sports injuries. Soft tissues like muscles, ligaments, tendons, fascia, and bursae may be affected. Traumatic brain injury (TBI) is another potential type of sports injury (Abou Elmagd, 2016). Children and adolescents are more likely to suffer sports injuries than, whose vulnerability is heightened by immature reflexes, an inability to recognize and evaluate risks. Injury rates are highest for athletes who participate in sports games with direct and recurrent contact, but the most serious injuries are associated with individual activities. Between one half and two-thirds of childhood sports injuries occur during practice, or in the course of unorganized athletic activity (Bahr & Engebretsen, 2009).

A key component to sport safety is ensuring that athletes adhere to proper guidelines and utilize proper protective equipment. Many sports such as hockey and football have regulations in place enforcing the use of safety equipment such as helmets, eye protection, mouth guards, and elbow and knee pads that are approved for every sport (Schiff et al., 2010).

A safety measures helps reduce potential sport injuries. It is important to establish participation in warm-ups, stretching, and exercise that focus on main

muscle groups commonly used in the sport of interest. Also, creating an injury prevention program as a team, which includes education on rehydration, nutrition, monitoring team members "at risk", monitoring behavior, skills, and techniques (Steven et al., 2014).

The school nurse is a vital member of the school team that leads change to advance health and collaborates with school staff members, parents and community members to keep students safe at school and healthy to learn. The role of the school nurse encompasses both health and educational needs school nurse availability student well-being & educational Success (Hunt et al., 2015).

### Significance of the study

In Egypt, injuries are a significant source of mortality and morbidity; they are the fifth leading cause of death. Injury is a common occurrence in many sports. Sportsmen are injured either by accident or intentionally by other players. School based student health surveys had been conduct in some Arab countries and showed that the percentage of children and adolescents whom seriously injured in one-year duration varies in different countries: Oman is the lowest 26.3%, UAE 30.7%, Tunisia 37.2%, Egypt 38.5%, Jordan 43.7%, Morocco 44.7% and Yemen is the highest 70.4% (Sarhan , 2012). Because the proportion of school injuries in Egypt exceeded one third, so the researchers conducted the study to know the types and causes of injuries and its safety measures.

### Aim of the study

- To assess knowledge and practice of the school trainers regarding to sports injury.
- To assess students'knowledge regarding to sports injuries and its safety measures.

### Research questions

- What is the level of knowledge and practices for school trainers regarding to sports injury and its safety measures?
- What is the level of knowledge for students regarding to sports injury and its safety measures?
- Is there relation between demographic data and knowledge of students about sports injuries and its safety measures?

### Subjects & methods

#### Research design

A descriptive research design was used in this study.

#### A-Setting

This study was conducted at all preparatory and secondary sports and military schools at Assiut Governorate which are 4 sports schools: El Hamra

sports School, khadiga Yossef sports School, Samih El- Saeed sports school, and Military sports School.

#### Sample

A convenient sample was used to include all available number of trainers and students in the previous four schools. The total sample size was (772). Which the participants in the study was (45) trainers and (611) students to became the total participant sample (656). The loss of the sample was either refused or absence. The sample was divided into: - EL-Hamra sports school (7 trainers & 73 students), Khadiga Youssef sports school (6 trainers & 54 students), Samih El-Saeed sports school (18 trainers & 366 students), and Military sports school (14 trainers & 118 students).

#### Tools of the study

Two tools were used to collect data for this study:-

##### Tool I

Self-administrative questionnaire sheet was developed by researchers to collect data; it was based on review of pertinent literature to elicit information from the trainers and the students. It includes two parts:

**Part (1):** The questionnaire was included (personal data) from trainers and students.

- **Trainers' personal data** it included: age, sex, residence, marital status, qualifications, years of experience, and prior attendance of any training program about sports injury.
- **Students' personal data** it included: age, sex, residence, educational stage, and school system.

##### Part (2)

Questions related to participant's knowledge about sports injuries it included: definition, most common causes, signs and symptoms, types of injuries, factors affecting the healing of sports injury also reported practice about safety measure methods.

#### Scoring system

A score of 1degree was given for each correct answer and a score of zero was given for an incorrect answer. The score of each item summed-up and then converted into a percent score. Poor knowledge for score less than 50%, satisfactory knowledge for score 50-70% and Good knowledge for score more than 70% (Jain et al., 2015)

#### Tool II:

It included an Observational checklist was developed by researcher to assess the practices of trainers regarding to application of injuries' safety measures during their practices in the schools. It included three elements for safety measures practices before, during, and after activity.

- **Regarding to safety measures practices before activity** it included checking all equipment that using in the game, assessing weather related policies of activity, Checking the participants in

activity according age and weight, Ensuring athletes drinking fluids 30 minutes before activity begins, and Ensuring the athletes making warm-up routine.

- **Regarding to safety measures practices during activity** it included ensuring the students wear appropriate clothing and shoes, Supervising all the time of training, follow safety rules and laws for particular activity, follow rules on equipment use, Excluding the student from training or sports activity immediately in case of any symptoms, and providing immediate first aid for injuries (acting Rest, Ice, Compression, and Elevation (RICE) program)
- **Regarding to safety measures practices after activity** were included making cool-downs part routine and inculcating sportsmanship among the students by avoiding deliberate violence.

#### **Scoring system**

A score of 1 degree was given for each done and a score of zero was given for not done. The score of each item summed-up and then converted into percent score. Inadequate practice for score less than 60% and adequate practice for score  $\geq 60\%$ .

#### **Validity test**

Checked and revised by panel of three experts from Community Health Nursing and Public Medicine staff at Assiut University who reviewed the instruments for clarity, relevance, comprehensiveness, understanding and applicability.

#### **Reliability test**

Reliability was applied by the researchers for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar conditions two times 15 days apart. Cronbach's Alpha reliability was 0.822.

#### **Methodology**

##### **I-Administrative phase**

An official approval letter was obtained from the Dean of Faculty of Nursing at Assiut University to general Secretary of Ministry of Education then to Directors of Sports and Military Schools at Assiut Governorate. This letter included a permission to carry out the study and explain the purpose and nature of the study.

##### **II-Pilot Study**

A pilot study was carried out before starting data collection on 10 % (77) of the sample who was included in the study sample. The pilot study aimed to assess the clarity, applicability of question and statement, feasibility and consistency of the tool to detect any ambiguity in the study tools. It also helped to estimate the time required to fill the sheet.

### **III- Data collection Phase**

#### **Ethical considerations**

The research proposal was approved from ethical committee in the Faculty of Nursing at Assiut University. There was no risk for study subject during application of research, the study followed the common ethical principles in clinical research, oral consent was obtained from students and school trainers that were participated in the study after explaining the nature and purpose of the study, confidentiality and anonymity was assured and study participants have the right to refuse to participate or withdraw from the study.

#### **Field work**

- Data was collected from trainers and students in preparatory and secondary sports and military schools at Assiut Governorate. It was collected in the period from the 6<sup>th</sup> February 2016 until the end of May 2016. It consumed around 4 months through three days weekly divided into 2 days for collecting the questionnaire sheet and one day for filled observational checklist sheet. Then the available number of students was collected to filled the questionnaire in the available places (e.g classes, school library, physical education room, and gymnasium), and then the researcher first introduced herself and explained the purpose of the study for the participants before answering the question. The sheet was distributed to be answered within (20 minutes) or more depending on the participants' response to a question then collected. The questionnaire sheet was filled about (3-4) trainers and (30-40) students weekly.
- the observational checklist done by the researcher herself, who was filled out (2-3) sheet weekly through attending full exercises in all available activities at the sports schools to assess trainers' practices before, during, and after training according to scheduling of each game.

#### **Statistical analysis**

Data entry and data analysis were done using SPSS version 19 (Statistical Package for Social Science). Data were presented as number, percentage, mean, standard deviation. Chi-square test was used to compare between qualitative variables. Mann-Whitney test was used to compare between quantitative variables in case of non-parametric data. Spearman correlation was done to measure correlation between quantitative variables. P-value considered statistically significant when  $P < 0.05$ .

## Results

**Table (1): Distribution of the studied trainers regarding to their personal characteristics in the sports and military schools at Assiut Governorate, 2016. (N =45).**

Trainers' characteristics	No.	%
<b>Age: (years)</b>		
• ≤ 40 years	19	42.2
• > 40 years	26	57.8
<b>Mean ± SD (Range)</b>	<b>42.69 ± 7.91 (26.0 – 59.0)</b>	
<b>Sex:</b>		
• Male	42	93.3
• Female	3	6.7
<b>Residence</b>		
• Urban	39	86.7
• Rural	6	13.3
<b>Marital status</b>		
• Single	5	11.1
• Married	39	86.7
• Divorced	1	2.2
<b>Qualifications</b>		
• Physical education	32	71.1
• Non physical education	13	28.9
<b>Years of experience</b>		
• < 20 years	23	51.1
• ≥ 20 years	22	48.9
<b>Mean ± SD (Range)</b>	<b>17.22 ± 9.31 (2 – 34)</b>	
<b>Attendance training courses</b>		
• Yes	15	33.3
• No	30	66.7

According to research question no. (1):

**Table (2): Distribution of studied trainers regarding to their correct knowledge about sports injuries in sports and military schools at Assiut Governorate, 2016. (N =45).**

Knowledge	No.	%
<b>Definition of sports injuries</b>		
Correct answer	42	93.3
<b>Most common causes of sports injuries ≠</b>		
The wrong training	43	95.6
Neglecting the health aspect of students	36	80.0
Misuse of sports tools	37	82.2
Do not follow the necessary sports laws	30	66.7
Climatic conditions	31	68.9
Lack of adequate training place	31	68.9
Do not know	0	0.0
<b>Main signs and symptoms of sports injuries≠</b>		
Pain when movement and pressure	40	88.9
Swelling in the place of injury	35	77.8
Instability of the affected part	26	57.8
Stiff joints affected near the place of injury	24	53.3
Inability to walk or natural movement	38	84.4
Change in color of skin	31	68.9

Knowledge	No.	%
Heard voices when movement in the affected part	24	53.3
Do not know	2	4.4
<b>Types of sports injury≠</b>		
Contusion	38	84.4
Strain	37	82.2
Sprain	34	75.6
Dislocation	35	77.8
Abrasion	30	66.7
Fracture	33	73.3
Wound	30	66.7
Bleeding	33	73.3
Rupture	32	71.1
Do not know	2	4.4
<b>Factors affecting the healing of sports injuries ≠</b>		
The type and severity of injury	317	51.9
Early treatment	323	52.9
Choosing the appropriate treatment for the type of injury	312	51.1
Individual differences	291	47.6
Do not know	190	31.1

# More than one answers according to their responses

**Table (3): Distribution of studied trainers regarding to reported practice about safety measures methods of sports injuries in sports and military schools at Assiut Governorate, 2016. (N =45).**

Reported practice	No.	%
<b>Safety measure methods of sports injuries ≠</b>		
Follow the laws and regulations of the game	31	68.9
Physical and psychological rehabilitation	39	86.7
A balanced diet	29	64.4
Sufficient warm-up properly and orderly for body	38	84.4
Taking into account the environmental conditions	29	64.4
Medical examinations regular, thorough and accurate	30	66.7
Choose the necessary periods for training	33	73.3
Continue training and lack of interruptions for a long time	30	66.7

# More than one answers according to their responses

According to research question no. (1)

**Table (4): Distribution of the studied trainers according to their practices before, during, and after the activity in the sports and military schools at Assiut governorate, 2016. (N =45).01008145588**

Safety measures practices	Done		Not done	
	No.	%	No	%
<b>Before activity</b>				
Performing physical assessment for students	24	53.3	21	46.7
Checking the safety of the playing field	26	57.8	19	42.2
Checking all equipment that using in the game	40	88.9	5	11.1
Checking lightening and ventilation in halls	19	42.2	26	57.8
Assessing weather related policies of activity	37	82.2	8	17.8
Checking the participants according age and weight	45	<b>100.0</b>	0	0.0
Ensuring athletes drinking fluids before activity begins	35	77.8	10	22.2
Ensuring the athletes making warm-up part routine	39	86.7	6	13.3

Preparing an emergency action plan and first aid	17	37.8	28	62.2
<b>During activity</b>				
Ensuring the students wearing appropriate clothing & shoes	45	<b>100.0</b>	0	0.0
Ensuring the students wearing protective tools according each game	24	53.3	21	46.7
Ensuring the existence specialized medical team during training and matches	25	55.6	20	44.4
Supervising all the time of training.	45	<b>100.0</b>	0	0.0
Following safety rules and laws for particular activity	45	<b>100.0</b>	0	0.0
Following rules on equipment use	45	<b>100.0</b>	0	0.0
Encouraging athletes to drink fluids every 15-20 minute during training.	37	82.2	8	17.8
Excluding the student from training or sports activity immediately in case of any symptoms. ▶	39	86.7	6	13.3
Providing immediate first aid for injuries	45	<b>100.0</b>	0	0.0
<b>After activity</b>				
Making cool-downs part routine	18	40.0	27	60.0
Inculcating sportsmanship among the students by avoiding deliberate violence	36	80.0	9	20.0

▶ *E.g. general weakness, Dehydration, heat stroke, dizziness*

**Table (5): Distribution of the studied students regarding to their personal characteristics in the sports and military schools at Assiut Governorate, 2016. (N =611).**

Students' characteristics	No.	%
<b>Age: (years)</b>		
12 - < 14 years	156	25.5
14 - < 16 years	222	36.3
≥ 16 years	233	38.2
<b>Mean ± SD (Range)</b>	<b>14.83 ± 1.59 (12.0 – 18.0)</b>	
<b>Sex</b>		
Male	484	79.2
Female	127	20.8
<b>Residence</b>		
Urban	538	88.1
Rural	73	11.9
<b>Educational stage</b>		
Preparatory stage	306	50.1
Secondary stage	305	49.9
<b>School system</b>		
• Establishing an internal	118	19.3
• Full day	493	80.7

*N.B: School system: Establishing an internal: only for military school*



According to research question no. (2):-

**Table (6): Distribution of studied students regarding to their correct knowledge about sports injuries in sports and military schools at Assiut Governorate, 2016. (N =611).**

Knowledge	No.	%
<b>Definition of sports injuries</b>		
Correct answer	397	65.0
<b>Most common causes of sports injuries ≠</b>		
The wrong training	351	57.4
Neglecting the health aspect of students	317	51.9
Misuse of sports tools	341	55.8
Do not follow the necessary sports laws	293	48.0
Climatic conditions	284	46.5
Lack of adequate training place	269	44.0
Do not know	59	9.7
<b>Main signs and symptoms of sports injuries≠</b>		
Pain when movement and pressure	371	60.7
swelling in the place of injury	317	51.9
Instability of the affected part	228	37.3
Stiff joints affected near the place of injury	235	38.5
Inability to walk	290	47.5
Change in color of skin	263	43.0
Heard voices when movement in the affected part	213	34.9
Do not know	131	21.4
<b>Types of sports injury≠</b>		
Contusion	366	59.9
Strain	403	66.0
Sprain	328	53.7
Dislocation	292	47.8
Abrasion	268	43.9
Fracture	336	55.0
Wound	305	49.9
Bleeding	306	50.1
Rupture	294	48.1
Do not know	114	18.7
<b>Factors affecting the healing of sports injuries ≠</b>		
The type and severity of injury	317	51.9
Early treatment	323	52.9
Choosing the appropriate treatment for the type of injury	312	51.1
Individual differences	291	47.6
Do not know	190	31.1

# More than one answers according to their responses

**Table (7): Distribution of studied students regarding to reported practice about safety measures methods of sports injuries in sports and military schools at Assiut Governorate, 2016. (N =611)**

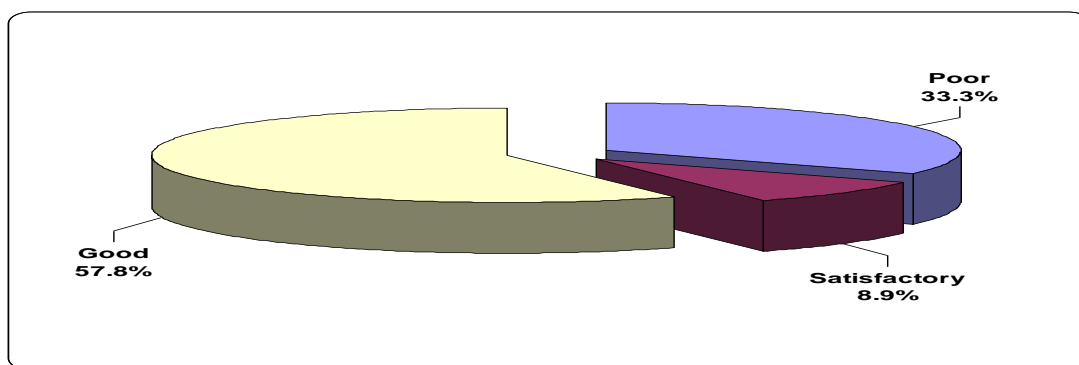
Reported practice	No.	%
<b>Safety measures methods of sports injuries #</b>		
Follow the laws and regulations of the game	396	64.8
Physical and psychological rehabilitation	325	53.2
A balanced diet	326	53.4
Sufficient warm-up properly and orderly for body	336	55.0
Taking into account the environmental conditions	276	45.2
Medical examinations regular, thorough and accurate	264	43.2
Choose the necessary periods for training	300	49.1
Continue training and lack of interruptions for a long time	308	50.4

# More than one answers according to their responses

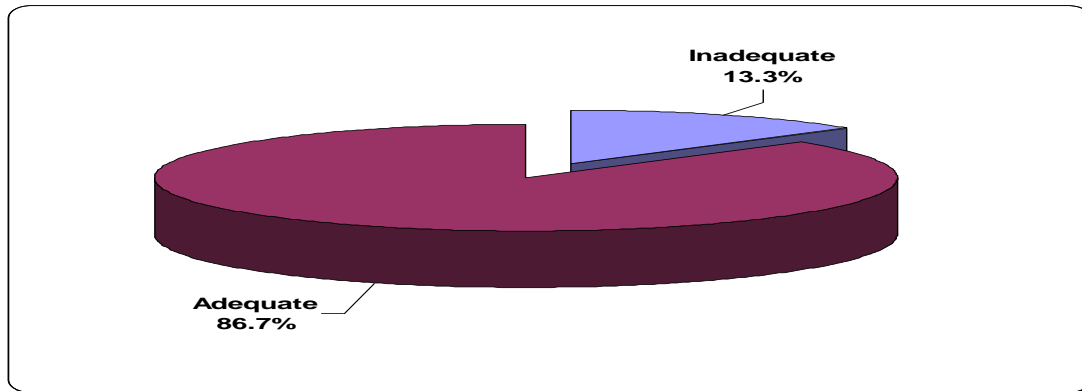
According to research question no. (3):

**Table (8): Relationship between some students' characteristics and their total score of knowledge about sports injury in the sports and military schools at Assiut governorate, 2016. (N =611).**

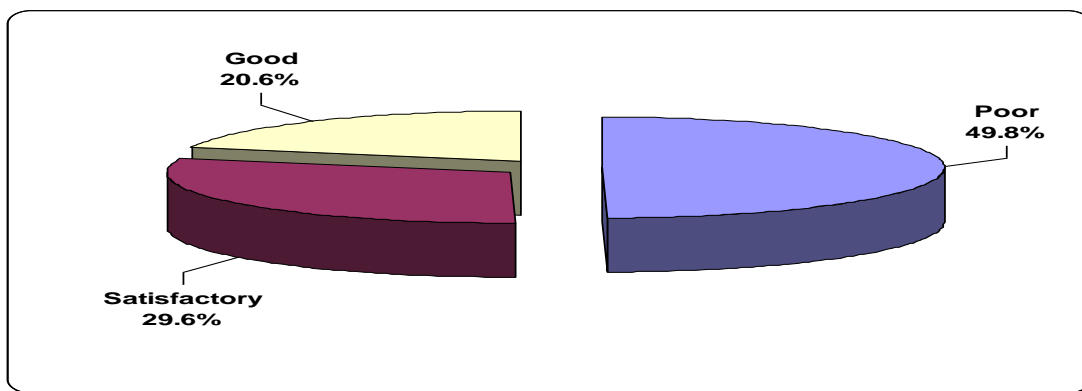
students' characteristics	Knowledge						P-value
	Poor (n= 304)		Satisfactory ( n= 181)		Good (n= 126)		
	No.	%	No.	%	No.	%	
<b>School type</b>							<b>0.000*</b>
Military School Sports	20	6.6	47	25.9	51	40.5	
Samih El-Saeed School	196	64.5	110	60.8	60	47.6	
Khadiga Youssef School	31	10.2	15	8.3	8	6.3	
El-Hamra School	57	18.7	9	5.0	7	5.6	
<b>Sex</b>							<b>0.000*</b>
Male	216	71.1	157	86.7	111	88.1	
Female	88	28.9	24	13.3	15	11.9	
<b>Age: (years)</b>							<b>0.006*</b>
12 - <14 years	96	31.6	37	20.4	23	18.2	
14 - < 16 years	93	30.6	76	42.0	53	42.1	
≥ 16 years	115	37.8	68	37.6	50	39.7	
<b>School system</b>							<b>0.000*</b>
Establishing in internal	20	6.6	47	25.9	51	40.5	
Full day	284	93.4	134	74.1	75	59.5	

**Fig. (1): Distributions of studied trainers regarding their total score of knowledge about sports injuries in the sports and military schools at Assiut governorate, 2016.**





**Fig. (2):** Distributions of studied trainers regarding their total score of practices about sports injury safety measures in the sports and military schools at Assiut governorate, 2016.



**Fig. (3):** Distributions of studied students regarding their total score of knowledge about sports injuries in the sports and military schools at Assiut governorate, 2016.

**Table (1):** Shows the distribution of the studied trainers regarding to their personal characteristics. It was noticed that 57.8% of the studied trainers aged more than 40 years and 93.3% of them were males. Regarding to residence and marital status; 86.7% of the trainers were from urban localities and married. Concerning educational qualification, it was observed that 71.1% of the studied trainers had physical education. 51.1% of the trainers had < 20 years' experience and 33.3% of them were attended training courses about sports injury.

**Table (2):** Clears the distribution of studied trainers regarding to their correct knowledge about sports injuries. It revealed that 93.3% of trainers defined sports injuries correctly; while 95.6% of them said that most common cause of sports injuries was wrong training. The 88.9% of trainers mention that main symptoms of sports injuries were pain when movement and pressure in the affected part; but only 4.4% of them don't know any symptoms. 84.4% of trainers reported that contusion is one of types of injuries. Regarding to factors affecting the healing of

injuries, the vast majority (93.3%) of trainers said that the early treatment helps in the healing process.

**Table (3):** Clears the distribution of studied trainers regarding to practice report about safety measure methods of sports injuries. It was revealed that 86.7% & 84.4% mentioned that physical & psychological rehabilitation and sufficient warm up properly helps in safety measure methods for sports injury respectively.

**Table (4):** Reveals the distribution of the study trainers according to injury safety measures practices before, during, and after the activity. *Firstly* according to safety measures practices before activity, it was observed that all the trainers were checking the participants in activity according age and weight, but 37.8% of them were preparing an emergency action plan and first aid. *secondly* regarding to safety measures practices during activity, it was noticed that all the trainers were ensuring the students wearing appropriate clothing & shoes, supervising all the time of training, following safety rules and laws for particular activity, following rules on equipment use and providing immediate first

aid for injuries. **Finally** according to safety measures practices after activity, it was mentioned that 80.0% of the trainers were inculcating sportsmanship among the students by avoiding deliberate violence, while 40.0% of trainers were ensuring that the students making cool-down part routine.

**Table (5):** Shows the distribution of the studied students regarding to their personal characteristics. It was found that 25.5% of the students aged from 12 to 14 years; while 36.3% of them aged 14 to < 16 years. 79.2% of the studied students were males and 88.1% were from urban localities. Regarding educational stage about 50.1% of the students were in preparatory stage and 49.9% of them were in secondary stage. 80.7% of students were spending in their school full day, but 19.3% of them were establishing an internal.

**Table (6):** It illustrates the distribution of studied students regarding to their correct knowledge about sports injuries. It was observed 65.0% of students known sports injuries correctly, While 57.4%, 55.8%, and 51.9% of them said that most common causes of sports injuries were wrong training, misuse of sports tools, and neglecting the health aspects of students respectively; and 60.7% of them mention that main symptoms of sports injuries was pain when movement and pressure in the affected part. 66.0% of students mentioned that strain was one of types of injuries. Regarding to factors affecting the healing of injuries, more than half (52.9%) of students said that the early treatment helps in the healing process.

**Table (7):** Clears the distribution of studied students regarding to practice report about safety measures methods of sports injury. It was revealed that 64.8% of students mention that following the laws and regulations of the game helps in methods of safety measure for sports injuries.

**Table (8):** Reveals that relationship between total score of students' knowledge about sports injuries safety measures and some of their personal characteristics. It indicated that there was statistical significant difference between students' school type, sex, age, and school system with their total score of knowledge about sports injuries safety measures (p. value = 0.000, 0.000, 0.006, and 0.000\*) respectively.

**Figure. (1):** This figure illustrated that 57.8% of trainers had good knowledge regarding to sports injury, while 33.3% of them had poor knowledge.

**Figure. (2):** Shows the distributions of studied trainers regarding their total score of practices about sports injury safety measures. It was observed that 86.7% of the trainers were adequate level of practices, but only 13.3% of them were inadequate level of practices.

**Figure. (3):** This figure illustrated that 49.8% of students had poor knowledge regarding to sports injury, while 20.6% of them had good knowledge.

## Discussion

Injury is a very significant public health issue threatening the health of children, adolescents, and young adults in the World. Certain contact sports are associated with 5.2 injuries per 1000 total athletic exposures in secondary school children (usually boys). These were more common during competition compared with training and fractures accounted for 16% of these injuries, whereas concussions (15.8%) and ligament sprains (15.7%) were almost as common (**Collins, et al., 2008**).

The findings of current study revealed that more than half (57.8%) of the studied trainers aged more than 40 years, this result similar to a study by **Siwon, (2013)** about the "Relationship between High School Coaches' Beliefs about Sports Injury and Prevention Practice Readiness" who revealed that the age trainers (coaches) ranged from 23 – 63 years, with a mean age of 38 and a median age of 33.

Also the present study noticed that the majority (93.3%) of trainers were males, this finding different with the study by **Siwon, (2013)** who showed that (65.8%) were male coaches and (33.3%) were female coaches. This difference in present study related to few numbers of female graduated from Physical Education College due to our different culture against female coaches.

While disagreeing with educational qualification of trainers who reported that the majority (95.7%) of the coaches completed college/university or post graduate study; but in the current study found that more than two thirds (71.1%) of the studied trainers had physical education. This related to recent years of establishment of physical education College in Assiut University which established in 1981 which interpreted why the percentage 95% not 100% of coaches were graduated from physical education.

Moreover the present study mentioned that one third (33.3%) of them had attended training courses about sports injury. These findings disagree with study by **Siwon, (2013)** who reflected that 25 to 50% of coaches attended courses training related to sports injury prevention.

In the present study, it was revealed that the majority (80.0%) of trainers said that most common causes of sports injuries were neglecting the health aspect of students. This supported by **Sanders et al., (2013)** about "The Sports Physical Therapy Perspective" who mentioned that the primary purpose of the Pre-participation examinations is to ensure the health and safety of athletes by ruling out medical contraindications to participation, such as risk factors. Regarding to safety measure methods for sports injuries, the most of the trainers (86.7% & 84.4%) mentioned that physical & psychological rehabilitation and sufficient warm up properly helps

in prevention of sports injury respectively. This finding in agreement with a study by **Shehab et al., (2006)** who conducted study about Pre-exercise stretching and sports related injuries: knowledge, attitudes and practices and showed that approximately 95% of the coaches recognized pre exercise stretching was helpful to decrease injury risk. In addition to the current study matching with study by **Siwon, (2013)** who reflected that 86.5% of trainers take stretching, athletic education, and warm up/ cool-down procedures in the injury prevention program.

According to injury safety measures practices before activity. The current study observed that 100.0% of the trainers were checking the participants in activity according age and weight; this due to the body building and weight control is considered one of the main characters of sports' student schools. This supported with a study by **Canine, et al., (2008)** about Epidemiology of Injury in Child and Adolescent Sports: Injury Rates, Risk Factors, and Prevention who stated that the preventive measures include increased awareness of pathogenic weight control in wrestling and gymnastics. also most of trainers (86.7%) ensuring the athletes to making warm up part routine, similarly to the study by **Kumar et al., (2014)** about Prevalence and pattern of sport injuries among college students who founded that the majority of students regularly practice warming up, more than fifty percentage of students do warming down, and more than two-thirds do stretching.

In the present study observed that 57.8% of trainers were checking the safety of the playing field, but 37.8% of trainers were preparing an emergency action plan and first aid. These findings contrast with the study conducted by **Siwon, (2013)** who stated that more than three quarter (78.4%) of coaches were checking safety of playing fields and facilities on a regular basis, but congruent with the current study which 44% of coaches identified that they prepared a written emergency action plan for injured athletes and have applied it when needed.

Regarding to safety measures practices during activity, the present study checked that all the trainers were ensuring the students wearing appropriate clothing & shoes, following safety rules and laws for particular activity, following rules on equipment use and providing immediate first aid for injuries.

Moreover most of trainers 86.7% were excluding the student from training immediately in case of any symptoms. These findings disagreed with **Kumar et al., (2014)** who reported that only one-fourth regularly practice all forms of preventive measures. Similarly with a study by **Siwon, (2013)** who reported that both coaches and athletic trainers have a

general duty to maintain the health and safety of the athletes

The findings of current study revealed that more than one third (36.3% &38.1%) of the students aged 14 to < 16 years and  $\geq 16$  years respectively; this is similar to **Abd El-Hay et al., (2015)** in a study about "Effect of Training Program Regarding First Aid and Basic Life Support on the Management of Educational Risk injuries among Students in Industrial Secondary Schools" who reported (40.0%, 38.3%) of the students aged from (15- 16 and 19) years respectively. Moreover another results disagreement with study by **Dasgupta et al., (2014)** about Effectiveness of Health Education in Terms of Knowledge Acquisition on First- Aid Measures among School Students of a Rural Area of West Bengal", Who mentioned that most of the students were 14 years of age 58.09%.

Regarding sex; the current study which indicated that 79.2% of the students were males and 20.8% were females; this is due to the most of families in Upper Egypt don't enrollment the female in sports schools; while this findings different with study by (**Johnson & McRae, 2015**) about Health-Risk Behaviors Among High School Athletes and Preventive Services Provided During Sports Physicals who reported that half of participants students were females.

According to residence; the majority of the studied students (88.1%) were from urban localities, while only 11.9% were from rural localities. These findings in contrast with **Abd El-Hay et al., (2015)** who noticed that more than half of students (58.3%) were from rural area; this difference due to the sports schools located in the Assiut city which is far from rural areas. In addition to a study by **Ming et al., (2012)** about Epidemiological Survey of the Prevalence of Non-fatal Injury among Children who was in Contrary with current study as it reported that 82% of studied students were lived in a rural area.

Concerning to the knowledge of the studied students about sports injuries, this study revealed that more than half (57.4%, 55.8%, and 51.9%) of the studied students said that most common causes of sports injuries were wrong training, misuse of sports tools, and neglecting the health aspects of students respectively. This finding inconsistent with **Zhao, (2013)** about Study on Sport Injuries among College Students who study conducted in China and reported that about one fifth of injuries that occurred due to many causes as insufficient preparation, incorrect technical movements, Overload of exercise, Lack of the self-protection awareness, Ground equipment, Fatigue/poor quality, and Psychological factors.

Regarding to knowledge of the studied students about types of sports injury, it was reported that 66.0% of

the students known strain is one of injury types. This result agrees with a study by **Caine et al., (2008)** about Epidemiology of Injury in Child and Adolescent Sports: Injury Rates, Risk Factors, and Prevention who founded that third-quarter of injuries were sprains and strains per game. However **Chapman et al., (2011)** disagrees with the present study who confirmed that the injury experienced most frequently was 'cut, stabbed, bruised or bleeding' 82.8%.

Concerning to factors affecting the healing of the sports injury, it revealed that 52.9% of students said that the factor affecting healing of sports injuries was early treatment. This supported with a study by **(Johnson & McRee, 2015)** who confirmed that Primary care providers therefore play a crucial role in identifying and intervening with young people at risk for poor outcomes related to health-risk behaviors. This reflected the importance role of primary care providers' e. g nurses or trained coaches who provide students with preventive measures which may decrease the incidence of injuries.

The findings of the present study revealed that 49.8% of students had poor knowledge regarding to sports injury, while 20.6% of them had good knowledge, this difference because there was not enough time for students to attend lectures or courses on sports injuries, and the coach only explained some guidelines for avoiding injury.

The current study indicated that there was positive statistical significant difference between students' school type, sex, and school system with their total score of knowledge about sports injuries safety measures (p. value = 0.000\*), This reflect that the students' knowledge was based on the type of school administration and regulating curriculum of physical education as the comparison here include different types of Sports Schools, including military administration and other schools were follow general administrations also military school has an internal residence and therefore the number of hours of practical and theoretical training is greater, as well as the trainers on a great scientific degree in the field of physical education so the most of students were athletes and participated in frequent tournaments which contributed to their knowledge of sports injuries.

### Conclusion

The study and research questions concluded that more than half of school trainers had good knowledge regarding to sports injury safety measures and most of them had adequate practice. On the other hand about half of students had poor knowledge regarding to sports injury safety measures.

### Recommendations

**Based on the previous findings of the present study, the following recommendations are suggested**

- Establish continuous educational program for students and trainers to improve their knowledge and practice about injury safety measures.
- The trainers and students emphasis on the application of the law and rules, which is aimed primarily at the safety of students.

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