PREVALENCE AND TYPES OF SPORTS INJURIES PRESENTING TO EMERGENCY DEPARTMENT SUEZ CANAL UNIVERSITY HOSPITAL

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ABSTRACT

Introduction: regular physical activity is essential for the prevention of various diseases and reduces the risk of premature mortality in general and coronary heart disease, hypertension, colon cancer, obesity and diabetes mellitus in particular. **The aim** of this study was to assess the most common sports causing injuries and to evaluate the types and mechanisms of these injuries. Patients and methods: The researcher examined 250 patients attending emergency department in Suez Canal University Hospital. **Results:** The study showed that the most common type of sports involved in injury was football.The ankle was the most common affected part in the whole body. Chest contusion and back contusion were the most common types of sports injuries in head, neck and trunk. Fractured scaphoid and fissure radius were the most common sports injuries. Ankle sprain was the most common injury. The study showed that (62.7%) of the studied patients who were playing football had injuries in the lower limbs. Ankle sprain was the most common sports injury that was associated with wearing football shoes. **Conclusion:** Ankle sprain was the most common sports injury associated with artificial grass court. Wrist strain was the common sports injury in the upper limbs associated with artificial grass court.

KEYWORDS: sports injury, football, ankle sprain

Introduction

Regular physical activity is essential for the prevention of various diseases and reduces the risk of premature mortality in general and coronary heart disease, hypertension, colon cancer, obesity and diabetes mellitus in particular (1,2). So, the participation of children and adolescents in organized sports is increasingly popular and widespread internationally. Indeed, many of these youngsters specialize in their sports beginning at an early age. (3)

The aim of the study: was to assess the most common sports causing injuries and to determine the types and mechanisms of these injuries.

Patient and Methods

The researcher examined 250 patients attending emergency department in Suez Canal University Hospital with the inclusion criteria of all ages and both sexes presenting with sports injuries within the last 24 hours including first and recurrent presentation. The with exclusion criterion was another cause of injury like a motor car accident and falling from a height. Including laboratory investigations (complete blood count and prothrombin time), radiological according to the affected region (plain X-ray on the affected limb, pelvic, abdominal ultrasound in cases of

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Table 1 Relation between footwear and injuries in the lower limbs for patients who were playing football.

Sport injury	Flat shoes		Football shoes		Total	
	N	%	N	%	N	%
Partial tear lateral collateral ligament	4	3.05 %	4	3.05 %	8	6.1 %
Partial tear medial collateral ligament	1	0.76 %	0	0 %	1	0.76 %
Knee sprain	4	3.05 %	0	0 %	4	3.05 %
Knee contusion	4	3.05 %	4	3.05 %	8	6.1 %
Fissure tibia	3	2.29 %	0	0 %	3	2.29 %
Leg contusion	0	0 %	10	7.63 %	10	7.63 %
Ankle sprain	0	0 %	35	26.7 %	35	26.7 %
Bi-malleolar fracture	0	0 %	8	6.1 %	8	6.1 %
Fracture lateral malleolus	0	0 %	13	9.92 %	13	9.92 %
Fissure metatarsals	0	0 %	11	8.39 %	11	8.39 %
Fissure proximal phalanx	3	2.29 %	3	2.29 %	6	4.58 %
Foot contusion	3	2.29 %	19	14.5 %	22	16.79 %
Foot contused wound	2	1.52 %	0	0 %	2	1.52 %
Total	24	18.3 %	107	81.6 %	31	100 %
Chi –square=102.8, p-value=<0.001*(statistically significant)						
Table (1) shows that ankle sprain is the most common injury that is associated with wearing football shoes(26.7%) regarding injuries in the lower limbs for patients who were playing football						

abdominal injuries & computed tomography in cases of brain injury).

Results

The study revealed that 38.8% of 250 patients were in the age group (25-35) years old & 94.8% of the studied patients were males. The study showed that the most common type of sports involved in injury was football (83.6%). The most popular sport causing injury for females was running (100%) while the most successful sport causing injury for males was football (88.18%). The study showed that most of the patients presented with pain and swelling as the main complaint. The most common mechanism of trauma involved in sports injuries was caused by direct trauma by another player (40%). Tenderness was the most common sign found during the examination (98.8%). None of the studied patients showed neurological abnormalities. The ankle was the most common affected part in the whole body (28.8%) as illustrated in figure (1). According to radiological investigations, fractures was the most frequent abnormality detected in X-rays (19.6%). Chest contusion (3.6%) and back injury (3.6%) were the most common types of sports injuries in head, neck and trunk. Fractured scaphoid (4.4%) and fissure radius (4.4%) were the most common sports injuries in the upper limb. Ankle sprain was the most common injury (19.2%) in the lower limb.

Regarding the relation between the type of sport and affected body region, the study showed that (62.7%) of the studied patients who were playing football had injuries in the lower limbs, (24.8%) had lesions in the upper limb, (7.2%) had injuries in the trunk while (5.2%) had injuries to the head & neck. The study revealed that 24.4% of the patients received medical treatment only, (64.4%) received conservative treatment in the form of a bandage, slab, cast & reduction with support, and (11.2%) of the studied patients required interventional treatment. According to the type of court, the study showed that (57.41%) of the studied patients, who were playing football, were playing over artificial green grass court. Regarding the type of footwear, (76.6%) of the studied patients who were playing football were wearing football shoes. Concerning the relation between type of footwear and type of sports injuries in the lower limb for patients who were playing football, ankle sprain was the most common sport injury that was associated with wearing football shoes (26.7%) in compared to (0%) related to wearing flat shoes as shown in table (1). Ankle sprain was the most common sports injury associated with artificial grass court (26.7%) while foot contusion was the most common injury related to real green grass court (10.6%) as shown in the table (2). Wrist sprain was the common sports injury in the upper limbs associated with artificial grass court (13.4%) as shown in the table (3). While fissure radius (9.6%) and fractured scaphoid (9.6%) were the most common injuries associated with wood courts. Wrist sprain was the most common injury in the upper limb that was related to football shoes (13.4%), and fissure radius was the most common with flat shoes as shown in the table (4).

Table 2 Relation between injuries in the lower limb and type of court for patients who were playing football.

Sport injury	Type of court									
	Green glass		Artificial grass		Wood		Solid		Total	
	N	%	N	%	N	%	N	%	N	%
Partial tear lateral collateral ligament	0	0 %	4	3 %	0	0 %	4	3 %	8	6.1 %
Partial tear medial collateral ligament	0	0 %	0	0 %	0	0 %	1	0.76 %	1	0.76 %
Knee sprain	0	0 %	0	0 %	0	0 %	4	3 %	4	3 %
Knee contusion	4	3 %	0	0 %	0	0 %	4	3 %	8	6.1 %
Fissure tibia	0	0 %	0	0 %	3	2.3 %	0	0 %	3	2.3 %
Leg contusion	0	0 %	10	7.6 %	0	0 %	0	0 %	10	7.6 %
Ankle sprain	0	0 %	35	26.7 %	0	0 %	0	0 %	35	26.7 %
Bimalleolar fracture	0	0 %	8	6.1 %	0	0 %	0	0 %	8	6.1 %
Fracture lateral malleolus	0	0 %	13	9.9 %	0	0 %	0	0 %	13	9.9 %
Fissure metatarsals	4	3 %	7	5.3 %	0	0 %	0	0 %	11	8.3 %
Fissure proximal phalanx	0	0 %	3	2.3 %	0	0 %	3	2.3 %	6	4.6 %
Foot contusion	14	10.6 %	8	6.1 %	0	0 %	0	0 %	22	16.7%
Foot contused wound	2	1.5 %	0	0 %	0	0 %	0	0 %	2	1.5%
Total	24	18.3 %	88	67.1 %	3	2.3 %	16	12.2 %	131	100 %
Chi–square=318, p-value=<0.001*(statistically significant)										
Table (2) shows that ankle sprain (26.7%) is the most common sport injury associated with playing football over artificial grass court and foot contusion (10.6%) is the most common sport injury associated with playing football over natural green grass court regarding the relation between type of sport injury and type of court.										

Table 3 Relation between sports injury in the upper limbs and type of court for patients who were playing football.

Sport injury	Type of court									
	Green glass		Artificial grass		Wood		Solid		Total	
	N	%	N	%	N	%	N	%	N	%
Ant shoulder dislocation	4	7.6 %	1	1.9 %	0	0 %	0	0 %	5	9.6 %
Fractured clavicle	1	2.2 %	0	0 %	0	0 %	0	0 %	1	1.9 %
Fracture medial humeral condyle	0	0 %	0	0 %	1	1.9 %	0	0 %	1	1.9 %
Elbow contusion	0	0 %	0	0 %	0	0 %	0	0 %	0	0 %
Fissure radius	4	7.6 %	0	0 %	5	9.6 %	0	0 %	9	17.3 %
Fracture radius	0	0 %	0	0 %	1	1.9 %	0	0 %	1	1.9 %
Fracture ulna	0	0 %	4	7.6 %	0	0 %	0	0 %	4	7.6 %
Wrist sprain	0	0 %	7	13.4 %	0	0 %	0	0 %	7	13.4 %
Hand & wrist contusion	0	0 %	0	0 %	4	7.6 %	0	0 %	4	7.6 %
Fracture scaphoid	0	0 %	4	7.6 %	5	9.6 %	0	0 %	9	17.3 %
Fissure phalanx	3	5.7 %	0	0 %	0	0 %	0	0 %	3	5.7 %
Fracture proximal phalanx	0	0 %	1	1.9 %	0	0 %	0	0 %	1	1.9 %
Dislocation interphalangeal joint	4	7.6 %	1	1.9 %	0	0 %	0	0 %	5	9.6 %
Dislocation metacarpophalangeal joint	0	0 %	2	3.8 %	0	0 %	0	0 %	2	3.8 %
Total	16	30.7 %	20	38.4 %	16	30.7 %	0	0 %	52	100 %
Chi-square= 259 , p-value=<0.001*(statistically significant)										
Table (3) shows that wrist sprain (13.4%) is the common sports injury in the upper limbs associated with playing football over artificial grass court. While fissure radius (9.6%) and fractured scaphoid (9.6%) were the most common injuries related to wood courts.										

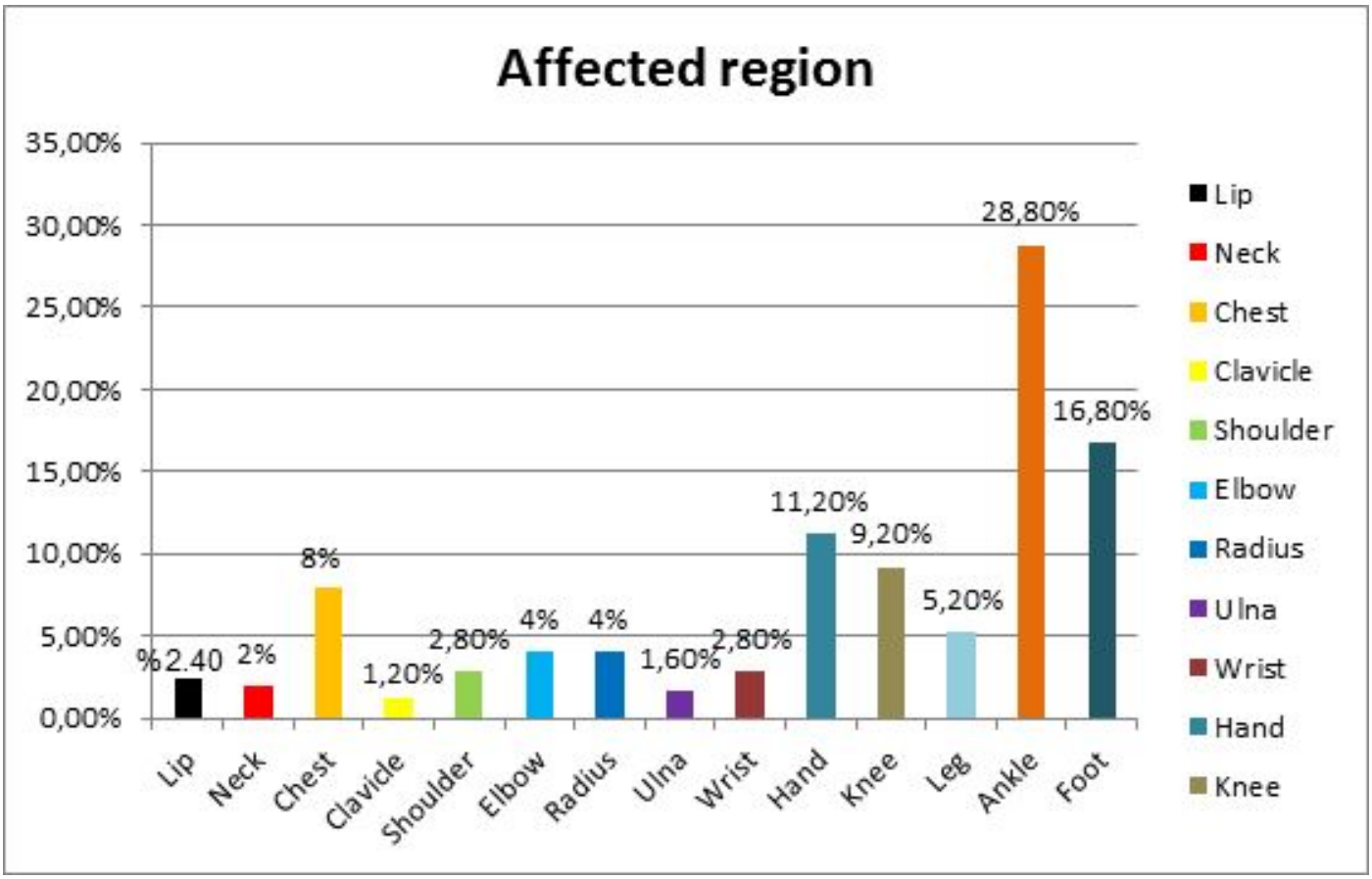

Figure (1): Affected body regions in sports injuries which show that 28.8% of the studied patients had ankle injuries as the most common affected body region in sports injuries/

Discussion

It is a cross-sectional study that had been carried out in the emergency department in Suez Canal University Hospital to assess the most common sports causing injuries and to evaluate the types and mechanisms of these injuries. Regarding the most common type of sports involved in the injury, the study revealed that (83.6%) of the studied patients were playing football. The high incidence of injury in football reflects the mass national participation in this sport within this country from a recreational level to organized leagues. It matches the results of a study performed in 2004 by S H Boyce & M a Quigley, which revealed that (62.6%) of the studied patients were playing football (4).

Moore A. et al. concluded that the most common sport involved with an injury was running. (5) According to the relation between sex and type of sports involved, the most popular sport causing injury for females was running while the most common sport is causing injury for males was football. Which matches the results of another study performed by Moore A. et al. (5)

According to the presenting complaint in the emergency department, the patients presented with pain and swelling as the main complaint. Which match the results of another study performed by Moore A et al. (5)

The study revealed that the most common mechanism of trauma involved in sports injuries was caused by direct trauma by another player.It can be due to the previous result that football is the most common type of sport involved in injury which is a contact sport and contact sports will lead to a higher chance of injury. Which did not match the results of the study performed by Moore A. et al. which concluded that the most common mechanism of trauma was overload injury (5)?

The study showed that tenderness was the most common sign found during the examination, which agrees with the results of another study performed by Moore A et al. (5) Regarding the neurological examination, none of the studied patients showed neurological abnormalities. While the results of another study performed by Moore A et al. showed that 0.2% of the studied patients had neurological abnormalities.(5)

The study showed that the ankle was the most common affected part in the whole body. These results did not match the results of another study performed by Quemelo P.R.et al. in which the knee was the most common affected part in the sports injuries. (6)

According to radiological investigations, fractures was the most frequent abnormality detected in X-rays. While S. H. Boyce concluded that (73%) of the studied patients had soft tissue injuries (contusions). (4)

That may explain it we were in a referral hospital, so less number of minor injuries reach our hospital. The results of this study showed that chest contusion and back contusion were the most common types of sports injuries in head, neck and trunk. These findings agree with the outcome of another study performed by S. H. Boyce & M. A. Quigley. (4)

Regarding the most common sports injury in the upper limb, fractured scaphoid and fissure radius were the most common sports injuries. These results did not agree with the outcome of another study performed by S. H. Boyce & M. A. Quigley, which

Table 4 Relation between type of footwear and injuries in the upper limb for patients who were playing football.

Sport injury	Type of footwear					
	Flat shoes		Football shoes		Total	
	N	%	N	%	N	%
Ant shoulder dislocation	0	0 %	5	9.6 %	5	9.6 %
Fractured clavicle	1	1.9 %	0	0 %	1	1.9 %
Fracture medial humeral condyle	1	1.9 %	0	0 %	1	1.9 %
Elbow contusion	0	0 %	0	0 %	0	0 %
Fissure radius	9	17.3 %	0	0 %	9	17.3 %
Fracture radius	1	1.9 %	0	0 %	1	1.9 %
Fracture ulna	0	0 %	4	7.6 %	4	7.6 %
Wrist sprain	0	0 %	7	13.4 %	0	0 %
Hand & wrist contusion	4	7.6 %	0	0 %	4	7.6 %
Fracture scaphoid	5	9.6 %	4	7.6 %	9	17.3 %
Fissure phalanx	0	0 %	3	5.7 %	3	5.7 %
Fracture proximal phalanx	0	0 %	1	1.9 %	1	1.9 %
Dislocation interphalangeal joint	4	7.6 %	1	1.9 %	5	9.6 %
Dislocation metacarpophalangeal joint	0	0 %	2	3.8 %	2	3.8 %
Total	25	48.07 %	27	51.9 %	52	100 %
Chi-square=149.6, p-value=0.001*(statistically significant)						
Table (4) shows that wrist sprain (13.4%) was the most common sports injury in the upper limbs associated with wearing football shoes. While fissure radius was the most common injury related to flat shoes (17.3%).						

showed that soft tissue injury of the hand and wrist was the most common.(4) According to the most common injuries in the lower limbs, ankle sprain was the most common injury. Which matches the results of the study performed by S. H. Boyce & M. A. Quigley.(4)Regarding the relation between the type of sport and affected body region, The study showed that (62.7%) of the studied patients who were playing football had injuries in the lower limbs, (24.8%) had injuries in the upper limb, (7.2%) had injuries in the trunk while (5.2%) had injuries to the head & neck. These results match the results of another study performed by Arni Arnason et. al. (7)

Regarding the required treatment the study showed that (24.4%) of the patients received medical treatment only, (64.4%) received conservative treatment in the form of a bandage, slab, cast & reduction with support, and (11.2%) of the studied patients required interventional treatment. Which match the results of the survey performed by S. H. Boyce & M. A. Quigley (4)

According to the type of court, the study showed that (57.41%) of the studied patients, who were playing football, were playing over artificial green grass court. Which matches the results of another study performed by Jaclyn Nicole Iacovelli, in which (65%) of all exposures occurred on an artificial courts.(8)

Regarding the type of footwear, (76.6%) of the studied patients who were playing football were wearing football shoes. These results agree with the outcome of the study performed by Jaclyn Nicole Iacovelli in which (96.8%) of the studied patients were wearing football shoes. (8)Regarding the relation between types of footwear and type of sports injuries in the lower limb for patients who were playing football, ankle sprain is the most common sports injury that is associated with wearing football shoes. Moreover, this may emphasize that non-professional player who wears football shoes expose to injury more frequent than those who wear flat shoes. These results did not match the results of another study performed by Jaclyn Nicole Iacovelli, which showed that knee injuries were the most common sports injury in the lower limb in patients wearing football shoes.(8)

According to the relation between sports injuries in the lower limb and type of court, the study showed that ankle sprain was the most common sports injury associated with artificial grass court while foot contusion was the most common injury related to general green grass court. These results match the results of another study performed by Jaclyn Nicole Iacovelli, which showed that ankle injury was the most common injury associated with artificial grass court while knee injury was the

most common injury related to provincial green grass court.(8)

According to the relation between sports injury in the upper limbs and type of court, wrist sprain was the common sports injury in the upper limbs associated with artificial grass court. While fissure radius and fractured scaphoid were the most common injuries related to wood courts. These results did not match the results of another study performed by Erin Cassell et.al. Which found that elbow injury was the most common injury in the upper limb associated with artificial grass court (9)

Regarding the relation between type of footwear and sports injuries in the upper limb, the study showed that wrist sprain was the most common injury in the upper limb that is associated with football shoes (13.4%), while fissure radius was the most common injury related to flat shoes (17.3%) but no other studies were available to compare this relation.

Conclusion

Fractured scaphoid and fissure radius are the most common sports injuries in the upper limb. An ankle sprain is the most common sports injury in the lower limbs that is associated with football shoes; Ankle sprain is the most common sports injury in the lower limbs related to playing on an artificial grass court While foot contusion was the most common injury associated with real green grass courts. A wrist sprain is the common sports injury in the upper limbs related to playing on an artificial grass court While fissure radius and fractured scaphoid were the most common injuries related to wood courts. Wrist sprain is the most common injury in the upper limb that is associated with football shoes While fissure radius was the most common injury related to flat shoes

Authors' Statements

Competing Interests

The authors declare no conflict of interest.

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