



## Pattern and Characteristic of Sports Related Injury in Emergency Department Sardjito Hospital

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### Abstract

**Objective:** Sport activities have been encouraged to everyone due to its benefits to the physical fitness, improving the endurance, and has psychological good impacts. But, sport activities also carries risk of injury to the body. Sports-related injuries are not an uncommon cause of ED visit. The aim of this study was to identify the pattern and characterize emergency department (ED) visits that result from sports-related injuries across the Sardjito Hospital. **Methods:** The study took place retrospectively observational study over a period of two years from January 2014 to December 2015 and included people 3 years of age or over. Any patient presenting with an injury attributable to participation in organised sport had their details and phone number noted in the medical record form by the orthopaedic resident. The patient medical record were analysed retrospectively. Demographic trends, pattern and characteristic for each patient were recorded. **Results:** A total of 133 eligible patients were enrolled to this study, 98 were male with the mean of age was 17.5. The most common type of sport that cause of injury was cycling (22.6%), followed by running (21.8%) and then football (17.3%). The majority of the patient sustained upper extremity injury (75.9%). 108 patients sustained fracture, 15 dislocation, and 10 soft tissue injury. There was statistical differences between type of injury as compared with age group ( $p = 0,000$ ), the age group of <10 years old, 11-20 years old, 31-40 years old and >40 years old suffered more fracture than dislocation and soft tissue injury. There was statistical differences between type of injury as compared with injured extremity ( $p = 0.03$ ), the injury mostly affected superior extremity, but there was no statistical difference between type of injury as compared with type of sports, gender and side of injury (left or right) ( $p > 0.05$ ). **Conclusions:** Sports can cause musculoskeletal injuries; good preparation must be taken to avoid severe injury. High percentage of upper extremity injury and lower extremity injury, the specific type and location of injuries of each sport should be known by health professionals.

**Keyword:** Sport injury, Emergency department, Age group, Gender, Location and types of injuries.

### Introduction

Sport activities carry risk of injury to the body and incur a significant amount of hospital resources. In the Netherlands, almost 46% of its 16 million people participate in sport activities, whether it's an organized sports or not [1]. It has been encourage to everyone due to its benefits to the physical fitness, improving the endurance, and has psychological good impacts. Eventhough those abundant advantages, on the other way sport activities also carries risk of injury to the body [2]. A survey published in 2009 by Blair et al in Netherland revealed that 3.5 million new sports injury occur each year [3].

From those number of injury related to sports, few cases can lead to high number of morbidities. Another study has been estimated that 7% of all new cases of paraplegia and quadriplegia found in health facilities are related to athletic activity. Sports related injuries also account for one fifth of injury-related visits to emergency departments by patient aged 5-24 years due to high interest for sports in adolescent population [2].

The aim of this study was to identify the pattern and characteristic of emergency department (ED) visits that result from

sports-related injuries in the Sardjito Hospital.

By knowing the pattern and characteristics of sports related injury in the population, it is expected to increase awareness of injury related to sports from various different kind of communities. Then, the effort to reduce sports injury rates to their lowest level possible can be done by using appropriate preventive measurements developed through evidence-based science. These efforts rely upon collecting accurate injury incidence, exposure, and risk and protective factor data [4].

**Methods**

The study is an observational study over a period of two years from January 2014 to December 2015. Any patient presenting with an injury attributable to participation in organised sport were included in this study. The patient medical record were analysed retrospectively. Demographic trends, pattern and characteristic for each patient were recorded and some of the variables were analyze using Chi-Square test.

Age of the subjects were grouped into 4 categories; <10 years old, 11-20 years old, 21-30 years old, 31-40 years old, and > 40 years old. Type of injury was divided into 3 categories; fracture, dislocation, or soft tissue

injury such as sprain, strain, or ligament injury.

The location of the injury were divided into upper extremity or lower extremity. Simple descriptive analysis and chi square test was done as the statistical analysis of this study using SPSS programmes.

**Results**

A total of 133 elligible patients were enrolled to this study, 98 were male with the mean of age was 17.5. The most common type of sport that cause of injury was cycling (22.6%), followed by running (21.8%) and then football (17.3%).The majority of the patient sustained upper extremity injury (75.9%). 108 patients sustained fracture, 15 dislocation, and 10 soft tissue injury. There was statistical differences between type of injury as compared with age group ( $p = 0,000$ ), the age group of <10 years old, 11-20 years old, 31-40 years old and >40 years old suffered more fracture than dislocation and soft tissue injury.

There was statistical differences between type of injury as compared with injured extremity ( $p = 0.03$ ), the injury mostly affected superior extremity, but there was no statistical difference between type of injury as compared with type of sports, gender and side of injury (left or right) ( $p > 0.05$ ).

**Table 1: The characteristics of injury related to sports in our intitution**

No			Type of injury		P value
			Fracture	Non Fracture	
1	Gender	Male	79	19	0.770
		Female	29	6	
2	Age	<10	39	1	0.000
		11-20	52	6	
		21-30	9	9	
		31-40	5	4	
		>41	3	5	
3.	Type of sports	Team	34	13	0.053
		Others	74	12	
4	Extremity	Right	47	16	0.065
		Left	61	9	
5	Limb	Upper	86	15	0.039
		Lower	22	10	

**Table 2: Top three sports as the cause of injury in this study**

No	Type of Sports	n	%
1	Cycling	30	22.56
2	Running	29	21.80
3	Football	23	17.29

**Table 3: The correlation between gender and type of injury**

Gender	Injury		Total	P - value
	Fracture	Non fracture		
Male	79	19	98	0.496
Female	29	6	35	
Total	108	25	133	

**Table 4: The corellation between age and type of injury**

Age	Injury		Total	P-value
	Fracture	Non fracture		
<10	39	1	40	0.000
11-20	52	6	58	
21-30	9	9	18	
31-40	5	4	9	
>41	3	5	8	
Total	108	25	133	

**Table 5: The corellation between extremity and type of injury**

Extremity	Injury		Total	P-value
	Fracture	Non fracture		
Upper limb	86	15	101	0.039
Lower limb	22	10	32	
Total	108	25	133	

## Discussion

There were not many published study regarding sports related injury. One of the published study was conducted by Nelson et al. This was a study conducted in Netherland published in 2011 which entitled with Sports-Related Injuries in Primary Health Care showed that soccer-related injuries are the most prominent in the patients that came to the general practioners with complain of sports-related injuries in the period of September 2007- April 2009.

Those study showed that lower extremities injury being 3 times more often involved than upper extremities, meanwhile, this study showed that more than 50% of the subjects sustained upper extremity injury (nelson). The results of this study is not concordance with the previous study. In this study,

cycling is the most common type of sport that cause injury. Fracture is the most common injuries of all sports related injuries, it involved mainly in the forearm region. This is interesting because the injuries came from sport involving lower extremities (cycling, running, football).

## Conclusions

The most common type of sport that cause of injury was cycling, followed by running and then football. The majority of the patient sustained upper extremity injury. Sports can cause musculoskeletal injuries; good preparation must be taken to avoid severe injury. High percentage of upper extremity injury, the specific type and location of injuries of each sport should be known by health professionals [5].

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