

# EPIDEMIOLOGY OF INJURIES AND DISEASES DUE TO OVERUSE IN RUGBY: OBSERVATIONAL STUDY OF THE PLAYERS OF “CUS PERUGIA RUGBY”

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## ABSTRACT

**Background** Rugby is a contact sport and for this reason is very demanding from a physical point of view. Up to now few studies describe the incidence and types of the most frequent traumas. The present study aims to evaluate the epidemiology of the major accidents related to the practice of this sport. **Materials and methods:** We collected data on a total of 321 players belonging to the Sports Club “CUS Rugby Perugia” for a total of three years taking into consideration the type of injury, the part of the body concerned, if the injury occurred during official competitions or in training, and also the lapse of time necessary for recovery. **Results:** We had a total of 240 accidents (45.8% of minor gravity, 36.6% of average gravity and 17.6% serious). About the type of trauma, we noticed that minor injuries consisted in most cases and above all in facial injuries, while the average and the severe severity accidents affected in most cases the knees: (sprains, meniscal and ligamentous tears). **Discussion:** By analyzing the collected data, we have noticed that the highest number of accidents occurred during official competitions, and especially during the last minutes of the game, probably due to a greater muscle fatigue. The role of the players is also important because it correlates with a different type of risk. **Conclusions:** This study confirms that rugby has a higher accident rate than other contact sports. Therefore specific training strategies and techniques should be implemented, reduce the incidence of injuries, especially at the level of the lower limbs.

**KEYWORDS:** Rugby, Injuries, Epidemiology, Contact Sport, Prevention

## Introduction

Rugby is a sport rapidly expanding in which players are often subject to trauma from high energy contact. Therefore this sport presents a greater risk of accidents than other sports, such as soccer or football [1]. Currently, few studies are analyzing the mechanisms of rugby-related trauma and the prevention of them. The causes high rates of accidents are to be found both in a significant number of players, the lack of use of body protections, the critical axial loads faced by the players and the specific locations of the sport. In fact, the rugby players usually assume a posteriorly unbalanced posture, to remain stable in the early stages of contact, which results in greater difficulty controlling

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the stability of the foot and therefore a higher incidence of the trauma of the ankle and lower limb [2]. The control of static and dynamic balance requires complex proprioceptive, vestibular and visual interactions and consequently, in the tackle and the melee the players must support very high gravitational forces. The type of injury depends not only on the nature of the sport but also from the role of the player and his practice level [3]. The forwards have a higher risk of shoulder, knee and ankle injuries, while the backline players have a higher incidence of damage to the shoulder, the hamstrings and the knee [4].

An analysis of the most frequent diseases can set programs for prevention and specific treatment [5]. The objective of this study was to evaluate the epidemiology of major accidents related to rugby.

## Material and Methods

We conducted a longitudinal observational study on the team players of CUS Rugby Perugia, for a total of 321 players during the 2012-2013 and 2013-2014 seasons. The teams examined are eight, and specifically: first men's team (2012-2013 Series B, Series A 2013-2014), team "Old" (over 30), team U-20 team under 18, under 14 team, Under-12 team, the team of series C and women's team of Serie A. The parameters considered are: the body segment concerned, the type of injury, the category of the injured players, the period of the season when the injury happened, whether in training or during official competitions, recovery time and return to sports. About the type of injury we have divided the trauma into three degrees of severity depending on the duration of the prognosis: lower (prediction of fewer than 15 days), medium (16-30 days) and severe (over 30 days).

## Results

The total number of traumas was 240 cases, divided into 110 mild injuries (45.8%), 88 moderate injuries (36.6 The body segment



**Figure 1:** Diffuse infiltrate of large cells with often eccentric enlarged nuclei frankly atypical. The cytoplasm is abundant eosinophilic (HEx40).

involved in the mild traumas was: face 34 cases (30.9

distortions); 14 thigh muscular contusions; 10 hand (4 extensor tendon injuries, 6 interphalangeal distortions), 8 shoulder (4 acromioclavicular dislocations, 4 subacromial impingement syndrome), 8 face (4 fractures of the cheekbone and 4 fractures of the nasal bones), 6 commotive head injuries (fig 3); in severe injuries: 8 ACL injuries (with or without meniscal tear), 4 PCL injuries, 4 meniscal injuries, 4 hand flexor tendon injuries, 6 fingers complex lesions, 6 deep muscular contusions, 4 ankle

ligaments injuries, 4 clavicle fractures, 2 commotive head trauma associated with frontal bone fractures (Table 1). To classify the severity of cranial traumas we based on recovery time and we classified them like mild injury if recovery time was less than 15 days, moderate if the recovery time was within 16-30 days and severe cranial trauma if recovery time was longer than 30 days.

The classification of the injured players is : 58 players of B-A series (20 mild, 22 moderate, 16 severe) , 32-player team " Old " ( 14 mild, 12 moderate and 6 severe), 22 players under 20 ( 14 mild, 6 moderate, 2 severe), 20 players under 18 (14 mild, 4 moderate and 2 severe), 16 players under 14 (10 mild, 4 moderate and 2 severe), 14 players under 12 (10 mild, 4 moderate, 0 severe), 44 men's team of series C (16 mild, 20 moderate, 8 severe), 34 women's team players in Major League (14 mild, 14 moderate and 6 severe) (Figure 2) .

The incidence of injuries according to the periods of the season was 16 accidents during the preparation (12 milds, four moderates); 72 traumas during training (28 mild, 34 moderate and ten severe); 156 injuries during games ( 76 milds, 50 moderates, 32 severe) (Figure 3).

## Discussion

During the course of present study mean pain score decreased from  $1.36 \pm 1.77$  (before starting the drug) to 0 after taking flupirtine and from  $2.20 \pm 2.58$  to 0 in the case of diclofenac sodium at the end of 48 hrs ( $p < 0.001$ ) which means that there is the real analgesic effect of both the drugs in reducing post-operative pain. This result of the present study is in conformity with the study undertaken by others [3-4]. The intergroup comparison shows that there is no statistically significant difference between two groups in mean VAS values which means that both drugs are equally efficacious in relieving postoperative pain. This result of the present study is in agreement with a study undertaken by Marczyk and Yadav et al. [3-4].

Other studies have shown the similar analgesic efficacy of flupirtine and diclofenac but with different timings of onset of analgesia. Attri et al. in their trial compared the analgesic potential of flupirtine and diclofenac with the same dose as in our study in elective abdominal surgeries and found that VAS scores decreased more rapidly in diclofenac group during 1st hour as compared to flupirtine group but after that period VAS score was comparable in both groups [5]. A similar study by Mastronardi et al. in 40 orthopedic patients for postoperative pain relief revealed that initially in first two hours there was no significant reduction in pain scores but after the second dose, there was a significant decrease in pain scores in both groups and analgesia scores remained comparable in both groups at all intervals [6]. The present study revealed pain abdomen, heartburn, and vomiting as the major adverse effects experienced by the patients who received diclofenac sodium. Only side effect observed in flupirtine group was nausea in a single patient. Heartburn in the diclofenac-treated patient was the only adverse effect which was statistically significant ( $p < 0.05$ ). Rest of the intergroup comparison for side effects was found not to be statistically insignificant ( $p > 0.05$ ). These results of our study are the findings of others in which oral administration of flupirtine was found to be helpful in avoiding the adverse effects of opioids and NSAIDs [5,7-9]. Yadav et al. did not find any statistically significant difference in adverse effects of the two drugs in their study [4]. Few other comparative studies of flupirtine with other drugs also showed that it is equally efficacious regarding pain relief with a lower incidence of adverse effects as that of opi-

**Table 1** Type of injury and gravity.

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%).						

oids and other drugs[10-20]. Hence, flupirtine could be a better alternative to opioids and NSAIDs in postoperative pain relief.

## Conclusion

The present study is not free of limitations. First of all, no placebo control was used in the patients given ethical problems. In this study, we made a comparison using an active control only. Secondly, some patients in each group were relatively small. Thirdly study measured the adverse effects for a short time only because of the limited duration of clinical observations as per post graduate thesis protocol. Hence, we conclude that in post inguinal hernia surgery flupirtine can result in significant decrease in pain within a short time and is well tolerated by most patients. Though we acknowledge pitfalls in the subjective assessment of analgesic activity, we feel our rigorous methodology provided an accurate comparison of the efficacy of flupirtine and diclofenac in post inguinal hernia surgery pain. However, multicentric trials with some patients are required to address these issues further.

## Aknowledgements

### Authors' Statements

#### Competing Interests

The authors declare no conflict of interest.

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