

# Sports-Related Fractures of the Hand in Pediatrics

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**Disclosures:** None

**Introduction:** Sports are a leading cause of pediatric injuries in the United States, and hand fractures represent one of the most common fracture types in this population. Prior epidemiological studies using national databases and school sports surveillance have established the baseline incidence and identified general risk factors, however, there remain critical gaps in knowledge about these fractures. This study seeks to fill the void in the literature, guide injury prevention strategies, and support local quality improvement efforts aimed at reducing the burden of pediatric hand trauma. The purpose of this study is to investigate the etiology, mechanisms, and demographic patterns of hand fractures sustained during sports-related activities in pediatric patients (<18 years old) treated within the NYU Hospital System.

**Methods:** A pilot study was conducted by reviewing the charts of all patients seen with a fracture of the hand and digits between March 2007 and July 2012. Fractures of the hand were defined as a fracture of the metacarpal and phalanx in the thumb and fingers. Fractures of the carpal bones, distal radius, and distal ulna were excluded. Sprains and contusions were not included in the study.

**Results:** A total of 503 patients were identified with 557 fractures reviewed. 182 fractures were excluded from the study because they were not sports-related. A total of 375 fractures were included in the study in 334 patients, 235 (70%) of which were males and 99 (30%) were females. The highest percentage of fractures occurred in Basketball with 36.8% of fractures (Figure 1). The top four sports comprising 73.31% of all fractures included football, basketball, soccer and baseball with the most common fractures in each of the top four sports involving the middle and proximal phalanx (Figure 2). The most common finger involved in the top four sports was the small finger. Most patients presented to the office one day after the injury (31%) with 70% of patients presenting within the first four days after injury. The majority of fractures were treated with splinting (88.6%) with closed reduction in 6.8% and surgical intervention required in 1% of all fractures.

**Discussion:** Sports-related fractures of the hand more commonly involve the middle and proximal phalanx. The majority of fractures in this study (73.3%) were found in football, basketball, soccer, and baseball. Most fractures of the hand were treated closed with splinting (88.6%) with surgical intervention required in only 1% of all fractures. Although fractures of the hand are common sports-related injuries in children, only a small percentage of fractures require a reduction, and a much smaller percentage require surgical intervention. Within the top four sports evaluated, there is a consistent trend within the study revealing the small finger as the most frequently involved and the middle and proximal phalanx as the most frequent bone fractured.

**Clinical Relevance:** The results of this pilot study are being used to conduct a large-scale retrospective review throughout the entire NYU Langone system to provide granular, community-based data to improve patient care. Ultimately, the findings may inform both clinical practice and community-based interventions designed to promote safer youth sports participation and prevent sports-related hand fractures in the pediatric population.

**Figure 1:** Incidence of fracture stratified by sport



**Figure 2:** Percent of most common bone injured stratified by sport

