

Lower Extremity Stress Fractures in the Pediatric and Adolescent Population: A Case Series and Assessment of Patient-Reported Outcomes

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INTRODUCTION:

Stress fractures are a common injury in the active pediatric and adolescent population. They are caused by repetitive loading of a bone and are often due to an overuse injury in active athletes. However there is little literature in this specific population in the lower extremity. We present the first descriptive case series of lower extremity stress injuries specifically in pediatric and adolescent populations, incorporating demographic, management and outcome information from both athletes and non-athletes with stress injuries.

METHODS:

IRB-approved retrospective study included patients under 18 years at a tertiary children's hospital who were diagnosed with a lower extremity stress fracture/reaction. Demographic data, mechanism of injury, physical exam, radiographic findings, treatment, & outcomes were collected. Descriptive statistical analysis was conducted.

RESULTS: 97 patients with stress injuries on clinical exam and on X-ray or MRI were included. Average age when diagnosed and BMI were 11.7 years (range 1.1-18 years) and 21.9 (range 13.4-44) respectively. The most common injuries were to the tibia (n=33, 28.4%) and metatarsals (n=28, 24.1%), with the least common involving the calcaneus (n=8, 6.9%) and cuneiforms (n=4, 3.4%). The most common athletic activities related to stress injuries were cross country (n=14, 14.4%), track and basketball (n=12, 12.4%), and soccer (n=11, 11.3%). The average time experiencing pain before diagnosis was 3.0 weeks (range 0-14 weeks). MRI was needed in 32.0% of patients to confirm a stress injury. The most common forms of treatment were controlled ankle motion (CAM) walker boots (58.6%) and physical therapy (PT) (38.1%). Mean time to return to activity was 11.4 weeks (range 1-58.6 weeks). Mean Lower Extremity Function Score of the patient population was 73.8, indicating no clinically important difference from full functionality.

DISCUSSION AND CONCLUSION: Lower extremity stress injuries in this pediatric cohort were most commonly seen in the tibia and in those involved in cross country. MRI was needed in around 32.0% of patients to confirm the injury. Treatment is commonly conservative, with CAM boots and PT being the most frequently utilized interventions. Average time to return to activity is 11.4 weeks while patient-reported outcomes show minimal deficits in functionality at long-term follow-up.

