

## **ABSTRACT**

Stress fracture of the tarsal navicular bone is a common overuse injury in the sporting population, particularly in track and field athletes. Biomechanical examination of 15 athletes presenting with navicular stress fracture was undertaken and differences were compared between injured and non-injured limbs. To investigate if any remarkable lower limb features are unique to and may predispose subjects diagnosed with stress fracture of the tarsal navicular bone, the results were compared to a matched control group comprising of 15 non-injured athletes of similar age, sex and activity, but with no history of a navicular stress fracture. Biomechanical examination consisted of measures and observations of lower limb alignment, tibial alignment, ankle joint range of motion, subtalar joint range of motion, forefoot and 1st ray position, and neutral and resting calcaneal stance positions. Data was analysed for significance using t-tests. In the analysis of injured to non-injured limb, there was no significant differences calculated. However, means of tibial alignment, ankle joint range of motion and neutral calcaneal stance position measures were different to values given in the literature (Root et al, 1971). Comparisons of fracture group to control group found significant differences in values of ankle joint range of motion with knee extended ( $P=0.002$ ) and with knee joint flexion ( $P=0.0001$ ), whilst there were no significant differences in other measures.

---

### **\* Correspondence:**

Jason Agosta  
Olympic Park Sports Medicine Centre  
Swan Street  
Melbourne Victoria 3004

Ph           +61 3 94270366  
Fax          +61 3 94271645  
Email:      jasona@opsmc.com.au