

## Session: MRI of Sports Related Injuries

### Ankle: Joint and Impingement

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**Target Audience:** Radiologists and clinical care providers who wish to update their knowledge on the use of MRI for diagnosing sports related injuries.

**Objective:** To provide an overview of ankle impingement syndromes.

**Introduction:** Ankle impingement is an important cause of chronic ankle pain and is defined as entrapment of an anatomic structure that leads to pain and decreased range of motion of the ankle. Ankle impingement can be caused by osseous or soft tissue abnormalities and is classified by location: anterolateral, anterior, anteromedial, and posterior.

**Anterolateral Impingement:** Anterolateral ankle impingement is typically caused by an inversion injury with damage to the lateral ankle ligament complex or joint capsule. Soft tissue lesions described in association with anterolateral ankle impingement include scar tissue and synovitis. Anterolateral ankle impingement is largely a clinical diagnosis of exclusion, but ultrasound and MRI can help identify soft tissue abnormalities. Conservative therapy is recommended for at least 6 months before surgery.

**Anterior Impingement:** Anterior impingement is caused by bony spurs along the anterior tibiotalar margin and is frequently associated with cartilage damage. Chronic capsuloligamentous traction by repetitive plantar flexion of the foot is believed to induce spur formation. The spurs can be detected with radiographs, but MRI can help assess for cartilage damage at the tibiotalar joint. Most patients respond to physical therapy, but arthroscopic resection of spurs can be helpful in resistant cases.

**Anteromedial Impingement:** Anteromedial impingement may be due to pronation (eversion) injury with a tear of the tibiotalar ligament or a supination injury with a possible rotational component. Similar to anterolateral and anterior impingement, it can be caused by scarring and synovitis, as well as bony spur formation. Ultrasound and MRI can help identify the soft tissue abnormalities. Physical therapy is also recommended as first-line treatment for anteromedial impingement.

**Posterior Impingement:** Posterior ankle impingement can be caused by overuse or trauma. Overuse has a better prognosis and can be seen in ballet dancers who forcefully plantar flex the foot during the “en pointe” or “demi-pointe” position. The impingement can be related to an os trigonum, Stieda process, or thickened posterior joint capsule with scar tissue. Most cases of posterior ankle impingement respond to physical therapy.

**Conclusions:** Ankle impingement syndromes are an important cause of chronic ankle pain. It is usually a clinical diagnosis, but imaging plays an important role identifying the causes of impingement. Radiographs can help detect bony spurs causing impingement, and ultrasound and MRI can help identify soft tissue abnormalities, such as scarring and synovitis. Conservative therapy is recommended as initial management.