

Foot and Ankle Problems in Dancers



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KEYWORDS

- Dancer • Ankle sprains • Midfoot injuries • Heel pain • Hallux valgus
- Impingement syndromes

KEY POINTS

- The dancer's foot and ankle are subjected to high forces and unusual stresses in training and performance.
- To keep dancers healthy, the health care team and the dancer must work together.
- The physician must be an advocate for the dancer and work to provide an accurate diagnosis and an effective treatment strategy.
- Monitoring performance and rehearsal load, fitness, and general health of the dancer will help to maximize the dancer's healing potential.
- Creativity is needed to modify treatment plans to accommodate the dancer's need to maintain strength, flexibility, and fitness during recovery.

INTRODUCTION

Dance is a demanding art form requiring years of training, musicality, and motor control, often at the extremes of joint range of motion. Elite dancers are athletes whose rigorous training, rehearsal and performance schedules predispose them to injury. The stresses of dance can result in common overuse injuries as well as some injuries unique to dancers. Dance has many forms, including classical ballet, modern, contemporary, jazz, tap, break dance, hip-hop, musical theater, ballroom, Irish, African, Flamenco, folk, aerial and contact improvisation.

Reports on professional dancers show high rates of injury in ballet, modern, and Irish dancers.¹⁻⁷ In a Swedish study, 95% of the professional dancers sustained at least 1 injury during a 1-year study period.⁸ The foot and ankle are the most frequently injured areas in dancers, with significantly higher rates reported in female ballet dancers.⁵ The sur les pointes position requires maximal ankle, hindfoot, and midfoot plantar flexion, while placing high forces across those joints (**Fig. 1**). Dance injuries may be the result of acute trauma, such as landing from a leap or turn, or more commonly from repetitive microtrauma, usually after a rapid increase in training volume and intensity. Menstrual

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Fig. 1. Radiograph of a female ballet dancer's foot in the sur les pointes position.

irregularities, disordered eating, low energy availability, low vitamin D, and osteopenia may contribute to dancers' risk for injury or delayed healing.^{9,10}

This article will review some common problems involving the foot and ankle in dancers, precipitating factors, clinical presentation, diagnostic tips, and treatment recommendations.

ANKLE SPRAINS

Ankle inversion injury is the most common traumatic injury in dance as it is in athletics.^{1,3-5} Many authors report ankle sprains as the most frequent acute injury. The mechanism of injury is typically an inversion injury (rolling over the lateral border of the foot), often while en pointe or demi-pointe, or in a missed landing from a jump. The lateral ligaments are most frequently injured, with the anterior talofibular ligament (ATFL) the most commonly injured ligament. The ATFL is injured when the ankle is plantar flexed; the calcaneofibular ligament (CFL) is injured when the ankle (foot) is in dorsiflexion (neutral) and inverted.

A history of previous ankle sprain is the greatest risk factor for an ankle sprain injury.¹¹⁻¹³ Dancers and athletes who have had an ankle sprain have impaired dynamic postural control (more postural sway than controls or uninjured dancers). Even after return to full professional dance or sport participation, and without complaints of instability, measurable differences in postural sway can be demonstrated.¹²⁻¹⁵

Diagnosis includes physical examination revealing tenderness to palpation over the anterolateral ankle ligaments, swelling, and ecchymosis. Radiographs should be obtained if there is any bony tenderness over fibula, sinus tarsi, or fifth metatarsal. If symptoms do not improve in a week, a computed tomography (CT) scan or magnetic resonance imaging (MRI) scan should be obtained to identify possible osteochondral injury to the talus or occult fracture.

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