to an ankle sprain, such as landing from a jump, transmits torque from the supinated foot to the lower leg. Due to the movement coupling, sudden supination of the foot translates to rapid external rotation of the leg, damaging the lateral collateral ligaments.

**The Role of Foot Orthotics**

If forefoot alignment is one of the mechanical factors contributing to ankle sprain, then custom foot orthotics can be used to address the imbalance. When the weight-bearing foot is inverted, pressure along the lateral border will usually be increased. Rather than just push the foot medially with a lateral wall, the use of posting under the forefoot, distal to the metatarsal heads, can rebalance forces. For example, in the case of a forefoot valgus, consider using a lateral wedge (from the fifth to the third metatarsal) extending it to the sulcus. Similarly, a plantarflexed first ray would benefit from a Reverse Morton’s-type accommodation that elevates the sulcus of the second to the fifth. In both cases you are rebalancing, attempting to exert the forefoot and bring it closer to a neutral position.

In combating chronic ankle sprains, it appears that the role of foot orthotics is to improve body position and allow greater ROM. In the past it was thought that holding the foot in a vertical position was best, and as a result, many foot orthotics were extrinsically posted to neutral. Whether the patient pronated or supinated, rearfoot posts were prescribed. With current understanding of the importance of postural control and the pressure sensors on the plantar foot, the role of orthotics has changed. The goal now is to provide ROM while engaging the sensor systems, which may allow sufficient time for the body to react when it senses sudden imbalance. This is supported by a 2012 study that provides preliminary evidence that custom foot orthotics can improve balance in older adults.¹

Foot orthotics should be designed to reduce strain on the foot, improve ROM, and enhance sensory feedback. Use of an intrinsically balanced semirigid shell with a deep heel cup will improve plantar contact and give good mechanical support without blocking motion. Medial support and full-length cushion top covers have the advantage of activating sensors along the entire sole. Most of these orthotics should not have a rearfoot post as this restricts motion of the subtalar joint. As previously mentioned, sulcus posting can be applied to reduce internal compensations and rebalance the forefoot.

Physical therapy is an important part of rehabilitation to prevent long-term, recurring problems. Muscle strengthening, stretching, and proprioceptive and balance training will improve the overall function of the neuromuscular system, restoring balance and control. Wearing lace-up ankle braces has also shown a reduced incidence of sprains among athletes. Studies indicate there is no clear benefit to early surgery, so it is often best to aggressively treat the condition using conservative measures before choosing to undergo an operation. Ankle function and associated injury prevention is a rich topic; a 2007 review by Douglas Richie Jr., DPM, FCPOAS, serves as a great reference for further study.²

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