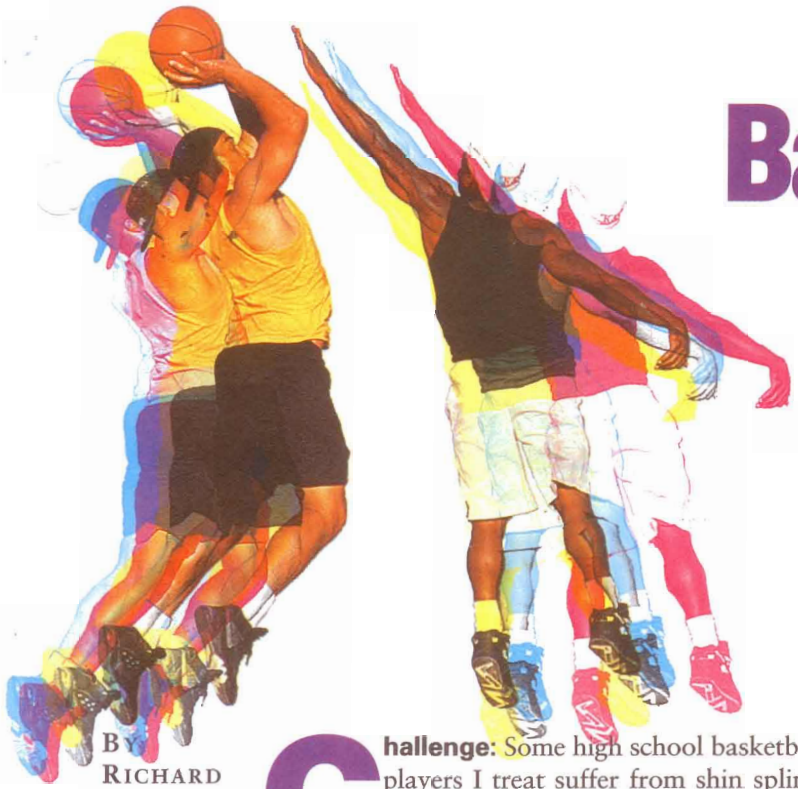

Basketball Biomechanics

Playing hoops can mean getting hurt. Orthotics make a difference.

BY RICHARD T. BRAVER, DPM

Challenge: Some high school basketball players I treat suffer from shin splints and plantar fasciitis. I want to prescribe them orthotic devices, but they have a history of frequent ankle sprains. Can the orthotics be modified to help prevent ankle sprains and still treat the existing problems?

Solution: Your sports medicine "playbook" contains numerous modification options to address this scenario.

One game plan involves deepening the heel cup to between 18 and 20 millimeters. This allows the device to more firmly grasp the heel, thus reducing excessive motion.

A lateral flange can be used on younger athletes' orthoses to obtain a proprioceptive response by Meissner's and Pacinian corpuscles, which are the joint receptors. It should be noted, however, that adults usually find lateral flanges intolerable, because higher flanges and clips tend to dig into the skin and break when fully-grown patients use them. This can reflect poorly on the podiatrist.

Orthotics made for basketball players should offer extrinsic rearfoot posting that is flat to the ground. This gives the orthotic a more even base so that it doesn't rock into varus. Rearfoot varus posting may contribute to the ankle sprains that players who wear orthotics suffer on the hardwood. Such posting increases rearfoot angulation, which might cause the foot to slide laterally and predisposes it to inversion stresses.

For unstable ankles, a lateral heel flair often is helpful. This is especially true when a player lands from a jump and the foot is mildly supinated. In this instance, the lateral flair acts as a wedge against further inversion and injury. A 5-degree pronation skive also can be added at the distal medial corner of the rearfoot posting to counter structurally high rearfoot varus.

Athletes who have a canvas foot structure benefit from more flexible components incorporated into the orthotic. Additionally, a forefoot extension including a first metatarsal head cutout with posting of metatarsals two through five in varus, or a valgus posting for metatarsals one through five, are indicated for this foot type. I find it valuable to incorporate the lateral heel flare or to widen the entire orthotic to increase the support base.

Players with a hypermobile or low-arched foot will find a firmer device useful. This would incorporate a forefoot extrinsic extension posting for metatarsals one through five in varus. The forefoot extrinsic extension posting provides additional anti-pronation control when the player pushes off on that foot, further reducing pronatory syptomatology.

One final recommendation: During casting the foot may be altered for the patient's benefit. In addition to holding the foot in neutral position, the arch height can be reduced or increased by manual distraction or compression. The skilled podiatrist can alter the foot's alignment and the orthotic may then be modified for optimal results. □

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